Vol. 915 Number 4

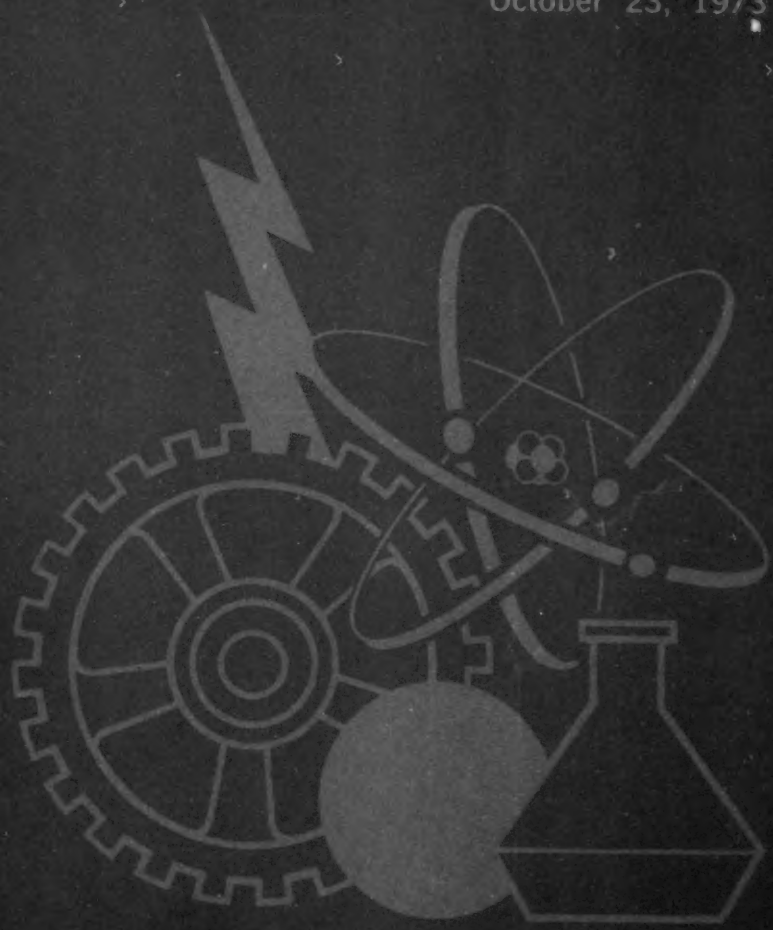
OFFICIAL GAZETTE

of the
UNITED STATES PATENT OFFICE

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

October 23, 1973



U.S. DEPARTMENT OF COMMERCE
Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

October 23, 1973 Volume 915 Number 4

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PATENT OFFICE NOTICES

Identification for Application Correspondence

The Patent Office has been receiving an excessively large amount of application correspondence having incorrect identifying data, such as incorrect application serial numbers and incorrect Group Art Unit numbers. Attention is invited to the Notice of March 5, 1971 (885 O.G. 2), which sets forth the identifying data which should be included on all papers relating to a pending application. The failure to correctly identify the application to which a paper pertains delays or precludes the matching of the paper with the application, and may result in an inappropriate action being taken in the application, e.g., application being considered abandoned for failure to respond. Particular attention should be paid to the use of the correct application serial number and the correct Group Art Unit number (copied from the most recent Office action).

WILLIAM FELDMAN,
Oct. 2, 1973. *Deputy Assistant Commissioner for Patents.*

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before Nov. 30, 1973.

Benjamin, Roger S., 6645 Northumberland Ave., Pittsburgh, Pa. 15217
Conlin, David G., 11 Winter St., Nahant, Mass. 01908.
Fendelman, Harvey, 815 18th St., #601, Arlington, Va. 22202
Stickney, Bernard, 6021 Birkshire Drive, Bethesda, Md. 20014

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Patent Office Business Hours

This procedure is being published to bring to the attention of the public security provisions concerning the Patent Office premises and Patent Office files.

The public is reminded that the Patent Office working hours are 8:30 a.m. to 5:00 p.m. Monday through Friday, excluding legal holidays in the District of Columbia. Outside these hours, only Patent Office employees are authorized to be in areas of the Patent Office other than the Public Search Rooms. Of course, a member of the public engaged in a discussion of business with an Office employee may be invited by the employee to stay beyond Office hours to conclude the discussion.

The hours for the Public Search Room are 8:00 a.m. to 8:00 p.m., and the hours for the Trademark Search Room are 8:00 a.m. to 6:00 p.m. Monday through Friday, excluding legal holidays in the District of Columbia.

During working hours, all applicants, attorneys, and other members of the public should announce their presence to the Office personnel in the area of their visit. In the Examining Groups, visitors should inform the group receptionist of their presence before visiting other areas of the Group.

RENE D. TEGTMEYER,
Sept. 27, 1973. *Acting Commissioner of Patents.*

Withdrawal of Attorney

Attorneys and agents are reminded that by notice published April 18, 1967, in 837 O.G. 667, requests for permission to withdraw as attorney or agent of record, pursuant to Rule 36, should be submitted in triplicate (original and two copies) and should indicate thereon the attorney or agent's present mailing address. The Group No. should also appear on all such requests.

JOSEPH F. NAKAMURA,
Sept. 27, 1973. *Acting Solicitor.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,729,551, C. C. Cohn, SURFACE TREATMENT OF ALUMINUM AND ITS ALLOYS, **filed** Nov. 20, 1972, D.C. Del. (Wilmington), Doc. 4520, *Colonial Alloys Company (partnership of Samuel L. Cohn and Charles C. Cohn)* v. *Howmet Corporation*. Notice of dismissal with prejudice pursuant to paragraph 4 of the attached Memorandum of Agreement, aforesaid civil action to be discontinued with prejudice; provided, however, it is understood and agreed between the parties hereto that such discontinuance with prejudice shall not constitute, and shall not be pleaded by Howmet as, a bar to any action by Colonial under this agreement, Feb. 28, 1973.

2,826,760, E. G. Rice, COMBINATION STOCKINGS AND PANTY; **Re. 25,360**, same, **filed** Nov. 2, 1972, D.C., W.D.N.C. (Charlotte), Doc. C–C–72–256, *Tights, Inc.* v. *Monarch Knitting Machinery Corporation*.

2,906,986, E. J. Schaefer, CABLE CONNECTOR; **2,958,842**, same; **3,404,363**, K. Fischer, ELECTRICAL CABLE CONNECTOR PART, **filed** Mar. 6, 1973, D.C., S.D. Iowa (Davenport), Doc. 73–11–D, *Weil-McLain Company, Inc.* v. *Franklin Electric Company, Inc.*

2,933,223, Kravig and Johnson, DECORATIVE BOWS AND METHOD AND MACHINE FOR FABRICATING THE SAME; **3,112,240**, same, DECORATIVE BOWS, **filed** Feb. 23, 1973, D.C., M.D. Pa. (Scranton), Doc. 73–120, *Minnesota Mining and Manufacturing Company* v. *Berwick Industries, Inc.*

2,958,842. (See 2,906,986.)

2,994,237, H. Pelphrey, TOOTH FORMING TOOL; **3,015,243**, J. C. Drader, TOOL FOR PRESSURE FORMING TOOTHED ELEMENTS, **filed** Nov. 27, 1970, D.C., E.D. Mich. (Detroit), Doc. 35711, *Michigan Tool Co.* v. *Techtool, Inc.* Consent judgment; plaintiff owner of patents, defendant permanently enjoined, Feb. 2, 1973.

3,015,243. (See 2,994,237.)

3,112,240. (See 2,933,223.)

3,115,647, W. M. Emery, CUSHIONS; **D. 197,397**, same, PILLOW, **filed** June 20, 1972, D.C. Md. (Baltimore), Doc. 72–634–HM, *Better Sleep Inc.* v. *Triangle Manufacturing Company, Inc.* Consent judgment entered 31st day January 1973, dismissing action, Feb. 1, 1973.

3,143,610, G. W. Gustafson, MOISTURE RESPONSIVE CONTROL APPARATUS, **filed** Aug. 2, 1972, D.C. Del. (Wilmington), Doc. 4440, *General Time Corporation* v. *Honeywell, Inc.* Stipulated agreed by and between counsel for the parties, pursuant to F.R.C.P. 41(a)(1)(ii), action shall be and it hereby is dismissed, with prejudice, Feb. 16, 1973.

3,180,744, Davies and Walther, REFRACTORY, **filed** Feb. 14, 1973, D.C., N.D. Ohio (Cleveland), Doc. C73–168, *Dresser Industries, Inc.* v. *Eltra Corporation*.

3,241,408, L. D. McCauley, VEHICLE WHEEL NUT OR BOLT, **filed** Feb. 15, 1973, D.C., E.D. Pa. (Philadelphia), Doc. 73–334, *McGard, Inc. and Lewis D. McCauley* v. *Hurst Performance, Inc.*

3,313,304, L. R. Beyer, BINDER, **filed** Feb. 22, 1973, D.C.N.J. (Newark), Doc. C–246–73, *Richard Metals Inc.* v. *The Lewart Company et al.*

3,349,726, L. Fono, METHOD FOR PANCAKE PRODUCTION, **filed** Apr. 6, 1973, D.C., M.D. Tenn. (Nashville), Doc. 6966, *Magic Pan, Inc.* v. *Tex Ritter's Chuckwagon System, Inc. et al.*

3,401,363. (See 2,906,986.)

3,423,825, Frost and Maguire, CAN OPENER, **filed** June 12, 1970, D.C., E.D. Mo. (St. Louis), Doc. 70C290(4), *Rival Manufacturing Company* v. *Swing-A-Way Manufacturing Company.* By consent of parties, order of dismissal filed. Complaint and counterclaim dismissed without prejudice, Mar. 29, 1973.

3,423,986, D. L. Young, RIVET GUN FOR BLIND RIVETS, **filed** Apr. 2, 1973, D.C. Colo. (Denver), Doc. C–4860, *Rivetmaster, Inc.* v. *Paul J. Christensen, doing business as Aviation Industrial Supply Company.*

3,476,845, Buff, French and Pollock, MANUFACTURE OF EXPANDED CELLULAR PRODUCTS, **filed** Mar. 23, 1973, D.C. Md. (Baltimore), Doc. 73–266–HM, *Tenneco Chemicals, Inc.* v. *William T. Burnett & Co., Incorporated.*

3,502,785, A. D. Nickola, MOUNTING PEDESTAL FOR UTILITIES, **filed** Apr. 30, 1970, D.C., E.D. Mich. (Flint), Doc. 34801, *Anne D. Nickola, doing business as Adnic Products Co.* v. *Woodland Mobile Home Manor, Inc. and D & B, Inc.* Judgment: parties having agreed to a settlement, patent valid, defendant permanently enjoined, Mar. 20, 1973.

3,512,221, Roger J. Schoerner, ALUMINUM ALLOY WIRE; **3,670,401,** same, METHOD OF FABRICATING ALUMINUM ALLOY ROD, **filed** Feb. 14, 1973, D. C., E.D. Tex. (Sherman), Doc. S–73–CA–6, *Southwire Company* v. *Capital Wire and Cable Corporation.*

3,538,848, W. P. Barbour, LATCH MEANS FOR A TRAVELING ROLLER PLATEN ON A SWINGABLE CARRIAGE, **filed** Sept. 22, 1971, D.C., M.D. Fla. (Tampa), Doc. 71–430–C, *Control Data Corporation* v. *Cellulose Products Corp.*

3,672,969, Nobel and Ostrow, ELECTRODEPOSITION OF GOLD AND GOLD ALLOYS, **filed** Apr. 3, 1973, D.C.N.J. (Newark), Doc. C–450–73, *Auric Corporation, Auric of N.J. and Fidelity Electronic Plating, Inc.* v. *Lea-Ronal, Inc.*

3,689,029, D. L. Bargman, Jr., RATCHET-TYPE LIFT JACK UNIT AND LIFT METHOD FOR CAMPER BODIES AND THE LIKE, **filed** Apr. 3, 1973, D.C. Colo. (Denver), Doc. C–4865, *Colorado Leisure Products, Inc.* v. *A–K Trailer Center and Coast to Coast Trailer.*

Re. 25,360, E. G. Rice, COMBINATION STOCKINGS AND PANTY, **filed** Feb. 26, 1973, D.C., M.D.N.C. (Greensboro), Doc. C–82–G–73, *Sew Special, Inc.* v. *Tights, Inc.*

Re. 25,360. (See 2,826,760.)

Certificates of Correction for the Week of Oct. 23, 1973

P.P. 3,183	3,716,501	3,729,135	3,736,291
D. 225,187	3,716,979	3,729,175	3,736,445
D. 226,739	3,717,068	3,729,266	3,736,491
3,474,965	3,717,560	3,729,298	3,736,516
3,477,575	3,717,621	3,729,358	3,736,766
3,566,778	3,718,275	3,729,408	3,736,897
3,586,268	3,718,647	3,729,467	3,737,123
3,594,709	3,718,695	3,729,493	3,737,130
3,599,156	3,718,697	3,729,503	3,737,375
3,601,342	3,718,727	3,729,511	3,737,447
3,605,294	3,718,858	3,729,575	3,737,602
3,620,105	3,719,508	3,729,749	3,737,617
3,624,551	3,719,520	3,729,753	3,737,668
3,624,793	3,719,694	3,729,913	3,737,703
3,632,396	3,720,067	3,729,969	3,737,742
3,635,959	3,720,261	3,729,988	3,737,802
3,639,694	3,720,297	3,730,162	3,737,871
3,640,853	3,720,583	3,730,254	3,737,986
3,645,352	3,720,690	3,730,357	3,738,102
3,647,065	3,720,778	3,730,426	3,738,172
3,654,467	3,721,242	3,730,461	3,738,491
3,663,693	3,721,526	3,730,567	3,738,536
3,665,427	3,721,681	3,730,629	3,738,866
3,670,446	3,721,708	3,730,697	3,738,992
3,670,971	3,721,709	3,730,773	3,738,999
3,671,840	3,721,794	3,730,782	3,739,008
3,673,193	3,721,830	3,730,844	3,739,246
3,674,720	3,721,964	3,731,353	3,739,270
3,677,331	3,722,177	3,731,411	3,739,304
3,679,675	3,722,227	3,731,418	3,739,490
3,679,749	3,722,386	3,731,460	3,739,622
3,682,991	3,722,981	3,731,614	3,739,722
3,684,597	3,723,098	3,731,637	3,739,862
3,684,646	3,723,170	3,731,722	3,739,874
3,686,184	3,723,370	3,731,739	3,740,163
3,687,759	3,723,530	3,731,750	3,740,385
3,688,101	3,723,541	3,732,064	3,740,427
3,688,660	3,723,545	3,732,199	3,740,465
3,689,294	3,723,993	3,732,275	3,740,479
3,689,578	3,724,154	3,732,287	3,740,489
3,691,873	3,724,179	3,732,315	3,740,615
3,692,790	3,724,201	3,732,340	3,740,684
3,698,677	3,724,223	3,732,539	3,741,264
3,699,115	3,724,291	3,732,577	3,741,436
3,699,141	3,724,300	3,732,752	3,741,480
3,699,913	3,724,441	3,732,907	3,741,568
3,700,697	3,724,518	3,732,938	3,741,577
3,700,798	3,724,735	3,733,196	3,741,670
3,701,638	3,724,954	3,733,275	3,741,689
3,702,331	3,725,014	3,733,321	3,741,692
3,705,071	3,725,035	3,733,406	3,741,700
3,705,753	3,725,095	3,733,475	3,741,776
3,705,867	3,725,357	3,733,531	3,742,321
3,707,487	3,725,379	3,733,733	3,742,360
3,707,850	3,725,481	3,733,948	3,742,376
3,708,091	3,725,494	3,734,131	3,742,431
3,708,319	3,725,544	3,734,195	3,742,458
3,709,567	3,725,697	3,734,350	3,742,705
3,710,199	3,725,946	3,734,352	3,742,881
3,711,271	3,726,664	3,734,617	3,743,087
3,711,512	3,726,692	3,734,645	3,743,095
3,711,513	3,726,738	3,734,702	3,743,096
3,711,540	3,726,910	3,734,772	3,743,182
3,712,395	3,726,921	3,734,908	3,743,256
3,712,709	3,727,016	3,734,918	3,743,585
3,713,008	3,727,447	3,734,946	3,743,641
3,713,177	3,727,656	3,734,951	3,743,668
3,713,689	3,727,763	3,735,074	3,743,784
3,714,501	3,728,089	3,735,267	3,744,202
3,714,537	3,728,278	3,735,283	3,745,132
3,715,162	3,728,347	3,735,470	3,745,371
3,715,188	3,728,819	3,735,897	
3,715,741	3,729,122	3,735,925	

Patents Available for Licensing or Sale

3,237,885. SPACE CRAFT. Jack L. Mohar, 41 W. Arbor St., Long Beach, Calif., 90805.

3,474,799. TOOTH SPACE CLEANER USING DENTAL FLOSS LINKS ON HOLDER. Vito P. Cappello, 1047 Franklin St., Santa Monica, Calif., 90403.

3,564,578. ROTARY ENGINE. John H. Taylor, 2033 Wilbur Ave., San Diego, Calif., 92109.

3,661,166. FLUID LOGIC CONTROL SYSTEM. R. W. Watson, Garlock, Inc., Division St., Palmyra, N.Y., 14522.

3,699,883. TRASH CONTAINER COMPACTOR. Donald B. Wiebe, 1529 E. Candlewood Ave., Orange, Calif., 92667.

3,713,156. SURFACE AND SUBSURFACE DETECTION DEVICE. Robert G. Pothier, Oak Hill Drive, Amherst, N.H., 03031.

3,727,118. CONTACTLESS REVERSIBLE DEVICE IN AN ELECTRIC CAR. Nippon Gijutsu Boeki Co., Ltd., 32F Kasumigaseki Bldg., 2–5 Kasumigaseki, 3-chome, Chiyoda-ku, Tokyo 100, Japan.

3,747,815. SKI CARRIER. Michael F. Ettl, Route 1, Box 75, Meridian, Calif., 95957.

3,735,504. ARITHMETIC TEACHING AID. Charles Fedyna, Youngstown, Ohio, Correspondence to Morton, Bernard et al., 1054 31st St., NW., Washington, D.C., 20007.

3,750,158. WEIGHT SENSITIVE SECURITY SYSTEM. Evangelos M. Anastassakis, Department of Physics, Northeastern University, Boston, Mass., 02115.

3,750,203. INFLATABLE WATER SKI. Alberto P. Ceccato, 6217 Belva Way, North Highlands, Calif., 95660.

3,750,385. CALENDAR WATCH SETTING MECHANISM FOR VARIOUS MONTH LENGTHS. Hans Kocher, Erlenweg 24, 3294 Buren a/Aare, Bern, Switzerland.

3,755,938. GRAPHMATIC MAGNEGRAPH. Alvin J. Bytwork, 3422 W. Michigan Ave., Kalamazoo, Mich., 49007.

Nuclear Metals, Inc., offers the following 2 patents for sale. Inquiries should be directed to: Martin J. O'Donnell, Cesari and McKenna, 89 State St., Boston, Mass., 02109.

3,567,407. COMPOSITE MATERIALS AND METHOD OF MAKING SAME.

3,523,354. METHOD OF PRODUCING LARGE SHAPES.

The Upjohn Company will consider exclusive or non-exclusive licenses at reasonable terms under the following 9 patents.

Inquiries should be addressed to: Paul B. Schwartz, Technology Licensing Associate, The Upjohn Company, 7171 Portage Road, Kalamazoo, Mich., 49001.

3,581,574. SAMPLE SUPPLY APPARATUS.

3,539,380. METHYLCELLULOSE AND POLYALKYLENE GLYCOL COATING OF SOLID MEDICINAL DOSAGE FORMS.

3,574,820. MEDICINAL DOSAGE FORMS OF UNPOLYMERIZED THIOLATED GELATIN WITH A CROSS-LINKED ACCELERATING AGENT PROVIDING SLOWLY RELEASED MEDICATION FROM A SWOLLEN MATRIX.

3,632,967. APPARATUS FOR CUTTING PLASTIC SHEET MATERIAL.

2,975,099. POLYETHYLENE GLYCOL SUPPOSITORY BASES.

3,435,111. PROCESS FOR DARKENING SKIN USING A GLYCERALDEHYDE COMPOSITION.

3,409,129. LABEL SCANNING DEVICE AND PROCESS.

3,624,200. CONTROLLING PERSPIRATION ON HUMAN SKIN WITH SCOPOLAMINE ESTERS.

2,949,032. THERMOMETER.

General Electric Company is prepared to grant non-exclusive licenses under the following 10 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patents may be addressed to: Patent Counsel, General Electric Company, Box 237 G.P.O., Detroit, Mich., 48232.

3,629,014. HARD SURFACING OF STEELS.

3,637,442. PROCESS FOR PRODUCING PLASTICALLY DEFORMED IRON-RHODIUM BASE ALLOY BODIES.

Applications for license under the following 3 patents may be addressed to: General Electric Company, Division Patent Counsel, Housewares Business Division, 1285 Boston Ave., Bridgeport, Conn., 06602.

3,590,503. SPRAY IRON.

3,590,504. SPRAY IRON.

3,723,932. THERMAL PROTECTIVE ASSEMBLY.

Applications for license under the following 5 patents may be addressed to: General Electric Company, Appliance Components Business Division, 1635 Broadway, Fort Wayne, Ind., 46804. Attn.: Patent Counsel.

3,109,684. LUBRICATION ARRANGEMENT FOR DYNAMOELECTRIC MACHINES.

3,166,828. METHOD FOR MOUNTING BEARINGS IN A DYNAMOELECTRIC MACHINE.

3,166,959. APPARATUS FOR MOUNTING BEARINGS IN A DYNAMOELECTRIC MACHINE.

3,721,641. FLEXIBLE VARNISH.

3,743,871. DYNAMOELECTRIC MACHINE LUBRICANT STORAGE ARRANGEMENT.

RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 18 patents. Inquiries respecting licenses under these patents should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of the Americas, New York, N.Y., 10036.

Re. 27,734. WIDE BAND RECORDING AND REPRODUCING SYSTEM.

3,751,250. METHOD FOR PHOTOEXPOSING A COATED SHEET PRIOR TO ETCHING.

3,751,636. SIGNAL TRANSITION DETECTION CIRCUIT.

3,751,726. SEMICONDUCTOR DEVICE EMPLOYING DARLINGTON CIRCUIT.

3,753,023. ELECTRON EMISSIVE DEVICE INCORPORATING A SECONDARY ELECTRON EMITTING MATERIAL OF ANTIMONY ACTIVATED WITH POTASSIUM AND CESIUM.

3,753,053. SEMICONDUCTOR ASSEMBLY.

3,753,153. DOUBLE PULSE BIAS STABILIZATION OF A MICROWAVE OSCILLATOR USING AN AVALANCHE DIODE OPERATIVE IN THE ANOMALOUS MODE.

3,753,247. ARRAY OF DEVICES RESPONSIVE TO DIFFERENTIAL LIGHT SIGNALS.

3,753,774. METHOD FOR MAKING AN INTERMETALLIC CONTACT TO A SEMICONDUCTOR DEVICE.

3,753,775. CHEMICAL POLISHING OF SAPPHIRE.

3,753,801. METHOD OF DEPOSITING EPITAXIAL SEMICONDUCTOR LAYERS FROM THE LIQUID PHASE.

3,753,816. METHOD OF REPAIRING OR DEPOSITING A PATTERN OF METAL PLATED AREAS ON AN INSULATING SUBSTRATE.

3,754,214. ELECTRONIC SECURITY SYSTEM.

3,755,011. METHOD FOR DEPOSITING AN EPITAXIAL SEMICONDUCTIVE LAYER FROM THE LIQUID PHASE.

3,755,671. METHOD OF PROVIDING A SEMICONDUCTOR BODY WITH PIEZOELECTRIC PROPERTIES.

3,755,693. COUPLING CIRCUIT.

3,755,694. MONOSTABLE/ASTABLE MULTIVIBRATOR.

3,755,720. GLASS ENCAPSULATED SEMICONDUCTOR DEVICE.

Disclaimers

Reissue No. 26,957.—*James L. McConnell*, St. Joseph, Mich. ELECTRONIC TIMER ESCAPEMENT AND COIN COUNTER. Patent dated Sept. 27, 1970. Disclaimer filed Sept. 4, 1973, by the assignee, *Whirlpool Corporation*.

Hereby enters this disclaimer to claims 18 and 24 of said patent.

Des. No. 225,866.—*Ryuzo Fujita*, Tokyo, Japan. COMBINED TAPE PLAYER AND RADIO RECEIVER THEREFOR. Patent dated Jan. 9, 1973. Disclaimer filed Aug. 2, 1972, by the inventor.

Hereby disclaims the portion of the term of the patent subsequent to July 11, 1986.

3,655,188.—*Karsten Solheim*, Phoenix, Ariz. CORRELATED GOLF CLUB SET. Patent dated Apr. 11, 1972. Disclaimer filed May 7, 1973, by the inventor.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,658,888.—*Lothar Hornig*, Frankfurt am Main, *Hans Fernholz*, Fischbach, Taunus, *Hans-Joachim Schmidt*, Frankfurt am Main, *Friedrich Wunder*, Florsheim (Main), and *Therese Quadflieg*, Kelkheim, Taunus, Germany. PROCESS FOR PREPARING VINYL ACETATE. Patent dated Apr. 25, 1972. Disclaimer filed Sept. 21, 1973, by the assignee, *Farbwerke Hoechst Aktiengesellschaft, vormals Meister Lucius & Bruning*.

Hereby enters this disclaimer to claims 1 and 3 of said patent.

3,722,731.—*Robert J. McCormick* and *Charles E. Fitzgerald*, Findlay, Ohio. INSET COVERALL LID FOR CONTAINERS. Patent dated Mar. 27, 1973. Disclaimer filed Sept. 12, 1972, by the inventors.

Hereby disclaim the portion of the term of the patent subsequent to June 29, 1988.

3,738,360.—*Gale E. Dryden*, Indianapolis, Ind. UNITARY DISPOSABLE CIRCLE ABSORPTION CANISTER ASSEMBLY. Patent dated June 12, 1973. Disclaimer filed Mar. 30, 1973, by the inventor.

Hereby disclaims the portion of the term of the patent subsequent to Mar. 2, 1988.

3,752,460.—*Thomas James Lytle*, West Orange, N.J. OXYGEN TRAP SCARFING APPARATUS. Patent dated Aug. 14, 1973. Disclaimer filed June 6, 1973, by the assignee, *Union Carbide Corporation*.

Hereby disclaims the portion of the term of the patent subsequent to Mar. 7, 1989.

Adverse Decisions in Interferences

In the designated interferences involving the indicated claims of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 2,933,246, J. Rabinow, READING MACHINE, decided Jan. 30, 1969, Interference No. 92,210, claim 12.

Patent No. 3,301,921, G. R. Short, ISOTACTIC POLYPROPYLENE MODIFIED WITH ETHYLENE-PROPYLENE COPOLYMER, decided May 17, 1973, Interference No. 96,624, claim 1.

Patent No. 3,308,639, G. E. Ziegler and G. I. Kilgour, APPARATUS FOR THE FLUID TREATMENT OF FABRICS IN ROPE FORM, decided Apr. 30, 1973, Interference No. 96,389, claims 1, 2, 4 and 5.

Patent No. 3,364,059, A. Marzocchi, GLASS FIBER-ELASTOMERIC SYSTEMS TREATED WITH MERCAPTAN-CONTAINING ORGANO SILANE ANCHORING AGENTS, decided May 31, 1973, Interference No. 97,469, claims 1, 2, 3, 4, 6, 7, 8, 9, 10, 12 and 14.

Patent No. 3,379,494, G. E. Ziegler and G. I. Kilgour, METHOD FOR TREATING FABRICS IN ROPE FORM, decided Apr. 30, 1973, Interference No. 96,760, claims 1, 2, 3, 4 and 6.

Patent No. 3,423,079, C. G. McKeown, COIL ANNEALING CONVECTOR PLATE, decided May 18, 1973, Interference No. 97,256, claims 1 and 4.

Patent No. 3,467,051, W. J. Shimanckas, EXHAUST SYSTEM FOR MARINE PROPULSION DEVICE, decided Mar. 28, 1973, Interference No. 97,498, claims 1, 2, 3 and 4.

Patent No. 3,504,299, A. G. Fox, OPTICAL MASER MODE SELECTOR, decided May 29, 1973, Interference No. 97,581, claim 1.

Patent No. 3,533,198, R. W. Burns, ABRASIVE DRUM CONSTRUCTION, decided June 19, 1973, Interference No. 98,061, claims 4 and 5.

Patent No. 3,559,233, G. J. Bottomley, W. M. Nichols, C. E. Watkins and L. D. Wilson, METHOD AND APPARATUS FOR EVISCERATING POULTRY, decided June 19, 1973, Interference No. 97,769, claims 1, 2 and 5.

Patent No. 3,572,217, S.E. Corry, COUPLING DEVICE FOR FLUID PRESSURE TRANSMISSION CONDUITS, decided May 23, 1973, Interference No. 97,788, claims 1, 3 and 5.

Dedications

3,195,533.—*Victor H. Fischer*, Columbus, Ohio. DETECTING PHYSIOLOGICAL CONDITIONS BY MEASURING BIOELECTRIC OUTPUT FREQUENCY. Patent dated July 20, 1965. Dedication filed May 7, 1973, by the assignee, *The Battelle Development Corporation*.

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,500,186.—*Richard H. Hronik*, Falls Church, *Blanchard D. Smith*, Alexandria, and *James Wallen, Jr.*, Annandale, Va. APPARATUS FOR HIGH-SPEED MEASUREMENT OF TRACK GEOMETRY. Patent dated Mar. 10, 1970. Dedication filed Mar. 8, 1973, by the assignee, *Melpar, Inc.*

Hereby dedicates to the Public the remaining term of said patent.

3,517,307.—*James Wallen, Jr.*, Annandale, and *Richard H. Hronik*, Falls Church, Va. TRUCK PROFILE AND GAUGE MEASURING SYSTEM. Patent dated June 23, 1970. Dedication filed Mar. 8, 1973, by the assignee, *Melpar, Inc.*

Hereby dedicates to the Public the remaining term of said patent.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 29, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-13-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo, Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-02-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Acting Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-07-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-07-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director.. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-18-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	2-21-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	12-07-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-01-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food: Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-15-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices, Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-29-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	1-12-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. BUCHLER, Acting Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-04-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	9-05-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-07-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	10-13-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-13-72

Expiration of patents: The patents within the range of numbers indicated below expire during October 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,764,758 to 2,769,171, inclusive
Plant Patents..... Numbers 1,522 to 1,525, inclusive

PATENTS

GRANTED OCTOBER 23, 1973

GENERAL AND MECHANICAL

3,766,564

GLOVES

George Wallace Varley, Bletchley, England, assignor to A. T. Kinswood and Company Limited, London and Kirgloves Hitchin Limited, Hitchin, Hertfordshire, both of England

Filed July 26, 1971, Ser. No. 166,297

Claims priority, application Great Britain, Oct. 8, 1970, 47,983/70

Int. Cl. A41d *19/00*

U.S. Cl. 2—161 A **4 Claims**

A glove for sporting and industrial use and of which the palm side is at least partly comprised of the skin (a) of a snake of the sub-family Acrochordinae within the Colubridae, or (b) of a file snake of the genus Colubridae Mehelya or (c) of the Rosette or Lixia shark, the skin having a finished thickness not exceeding one millimeter. A specific example would be a golfer's glove, it being a characteristic feature of the invention that the glove as specified affords a firm grip to be maintained in both wet and dry conditions.

3,766,565

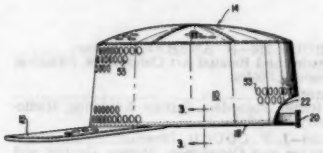
HEAD COVERING HAVING METALLIC REFLECTING SURFACE

Jerold E. Cozzens, Albuquerque, N. Mex., assignor to Ray-Ban Solarscreen, Inc., Abuquerque, N. Mex.

Filed Nov. 6, 1970, Ser. No. 87,371

Int. Cl. A42b *1/18*

U.S. Cl. 2—200 **13 Claims**



An article of wearing apparel constructed of a material which is operable to reflect radiant energy away from a wearer and to prevent the rapid conduction of heat from an exterior surface to an interior surface thereof. A specific embodiment, comprising a hat having a crown portion constructed from the material is operable to reflect radiant energy away from a wearer's head and to prevent the rapid conduction of heat from an exterior surface to an interior surface of the crown portion. The hat is provided with a perforated crown portion to provide for the flow of air through the crown portion and may be provided with a visor portion constructed of the material of the crown portion. The material is also operable to reduce glare from remote objects when the crown portion is interposed between the object and a viewer with the exterior surface of the crown portion facing the object.

3,766,566

HEM FORMING CONSTRUCTION OF GARMENTS, PARTICULARLY TROUSERS AND SKIRTS

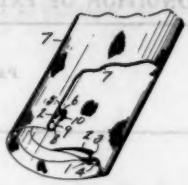
Shiunichi Tadokoro, 14-32 Mefugaoka, Takarazuka-shi, Hyogo-ken, Japan

Filed Nov. 1, 1971, Ser. No. 194,334

Int. Cl. A41d *27/24*

U.S. Cl. 2—275 **6 Claims**

An elongated tape-like fabric patch having a fusible substance applied thereto is placed to cover the entire turnup-forming margin of a tubular fabric body for garment such as trousers and skirt, one lateral edge of said tape-like patch being thermally bonded to the inner surface of said fabric body by the fusion of said fusible substance, the other side of



said tape-like patch being fixed to the turnup-forming margin by any suitable means. Other advantages and details of the arrangement will be made clear.

3,766,567

ARTIFICIAL HEART ASSEMBLY AND HEART ASSIST DEVICE

Paul Kahn, San Francisco, and Ronald C. Brown, Oakland, both of Calif., assignors to Cutter Laboratories, Inc., Berkeley, Calif.

Continuation-in-part of Ser. No. 72,628, Sept. 16, 1970, abandoned. This application Aug. 20, 1971, Ser. No. 173,396

Int. Cl. A61f *1/24*

U.S. Cl. 3—1 **27 Claims**

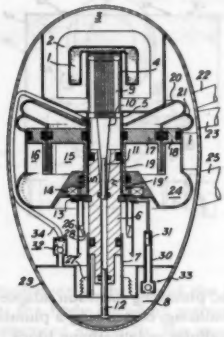
An artificial heart assembly comprising a pair of ventricles, a pair of atria or inflow means, a pair of sinus or outflow means for pumped blood, and fluid pumps to drive the ventricles. In a modification, a single ventricle is used as a ventricular assist device. Each ventricle has a shell providing a ventricular cavity and at least one pumping chamber in the shell. The chamber has a flexible non-stretching wall and a rigid wall sealed to each other. The rigid wall has an aperture to permit entry of the pumping fluid into the chamber. A blood-compatible material covers all blood-exposed surfaces in the cavity.

3,766,568

DRIVING DEVICE OF THE STIRLING-CYCLE RELAXATION TYPE FOR AN IMPLANTABLE ARTIFICIAL HEART

Pierre Lavigne, Grenoble, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Jan. 19, 1972, Ser. No. 218,909
Claims priority, application France, Jan. 22, 1971, 7102219
Int. Cl. A61f 1/24; F03g 7/06
U.S. Cl. 3—1 13 Claims



A blood-pumping sub-assembly constituted by cardiac modules is associated with a motor of the Stirling-cycle type integrated with a relaxation mechanism for the transfer of energy.

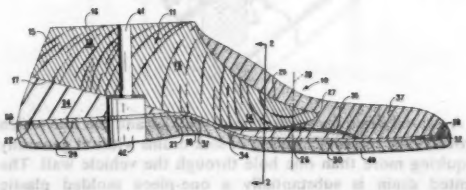
The motor comprises a driving-gas cylinder heated by the source of energy and a spring-action gas cylinder, a common piston block forming a cold source, a permeable regenerator displaceable between the hot-source cylinder-head and the piston, means whereby the piston block is locked to the pumping system with the regenerator at the cylinder-head at the end of the systole phase and the piston block is released at the beginning of the diastole phase, means for stopping the piston block during the diastole phase and permitting a limitation of the pumping volume, and means for returning the regenerator and freeing the block, thereby displacing the pumping system to the starting position by means of the spring-action gas throughout the systole phase.

3,766,569

ARTIFICIAL FOOT

John L. Orange, Route No. 3, Russellville, Ky.

Filed Oct. 5, 1972, Ser. No. 295,196
Int. Cl. A61f 1/08
U.S. Cl. 3—7 2 Claims



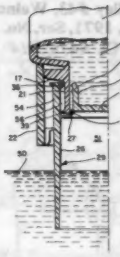
An artificial foot including an inelastic core occupying substantially the full height of the middle portion of the foot and the entire width of the foot and having a pair of elongated flat elastic leaf springs projecting forward and rearward from the middle portion of the core, so that the leaf springs will flex relative to the core under the weight of the wearer when walking, the free ends of both springs being separated from the respective portions of the core by resilient materials.

3,766,570

LIQUID DISPENSING DEVICE

James G. Finneran, Absecon, N.J., assignor to Wheaton Industries, Millville, N.J.

Filed Mar. 23, 1972, Ser. No. 237,406
Int. Cl. E03d 9/02
U.S. Cl. 4—222 2 Claims



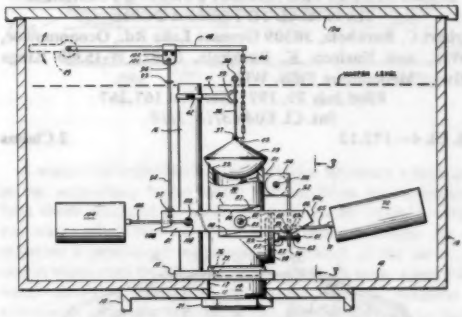
A dispensing device is provided, connected to a container which holds a liquid to be dispensed, such connection being tight, for purposes of shipping, but being releasable, for movement between two end-closing positions for dispensing liquid from the container. The device is particularly adapted for toilet tank use, with a dispensing device including a buoyant member which functions with the increase and decrease of water level in the toilet tank, in order to dispense a liquid germicide, perfume or the like into the tank. The dispensing device is molded as a one-piece unit, and it is separable into two distinct components.

3,766,571

PLURAL FLUSH TOILET VALVE APPARATUS

Michael L. Elder, 2018 Lakeview, Baytown, Tex., and John S. Little, Jr., 214 Riverside Dr., Highlands, Tex.

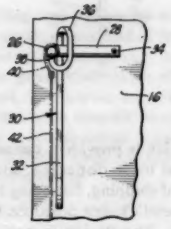
Filed Sept. 13, 1971, Ser. No. 179,837
Int. Cl. E03d 1/14, 1/22, 1/33
U.S. Cl. 4—37 4 Claims



Toilet valve apparatus having an upstanding tube seated at its lower end into the seat normally provided for the tank dump valve, and providing at its upper end an elevated tank dump valve seat. The tube has a side inlet which is closed by a disc valve. A float opens and closes the disc valve at the side inlet of the tube to open same when all of the water from the tank is to be discharged, and a second float operates a latching lever which latches the disc valve closed in response to water level in the tank. Operation of the tank handle in the normal direction, i.e., downwardly, opens the tank dump valve which operates in a normal manner, but causes discharge of only a smaller part of the tank water since the tank dump valve is

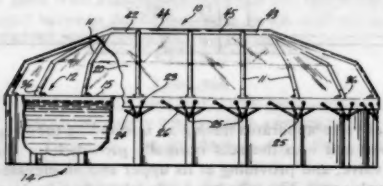
located at an elevated level at the top of the tube. Operation of the tank handle in the un-normal direction, i.e., upwardly, causes opening of the disc valve to open the side inlet of the tube whereby a larger part of the tank water is dumped.

3,766,572
SHOWER CURTAIN SUPPORT
Nelpher Wright, 3825 Valley #43, Walnut, Calif.
Filed June 24, 1971, Ser. No. 156,340
Int. Cl. A47k 3/14
U.S. Cl. 4—149 **6 Claims**



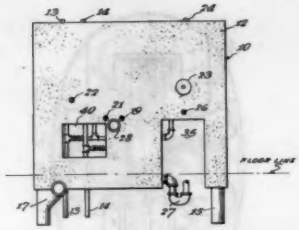
A shower curtain support for a bathtub-shower installation including a bathtub within a space having wall surfaces at the ends of the tub, a ceiling surface over the tub, and an open side along one side of the tub. The curtain support has a curtain rod with curved inturned ends and mounting bracket means for mounting the rod in position across the open side of the space with the inturned ends of the rod spaced from the wall surfaces to permit shower curtain hooks to slide along the rod from end to end and along its inturned ends for locating the ends of the shower curtain in close confronting relation to the wall surfaces.

3,766,573
DOME STRUCTURE FOR SUPPORTING FLEXIBLE MATERIAL TO FORM A DOME
Herbert C. Burkholz, 38309 Genesee Lake Rd., Oconomowoc, Wis., and Norman K. Burkholz, N–87, W-15380 Kings Hwy., Menomonee Falls, Wis.
Filed July 29, 1971, Ser. No. 167,267
Int. Cl. E04h 3/16, 3/18
U.S. Cl. 4—172.12 **2 Claims**



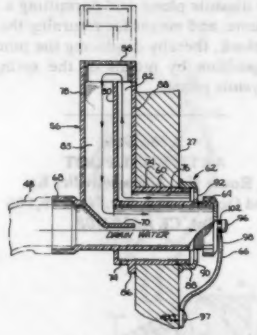
The structure for supporting a flexible material, such as a plastic sheet over the water in a swimming pool. The flexible material is supported by the structure in such a manner as to provide sufficient open space over the water in the swimming pool to permit normal use of the pool by swimmers.

3,766,574
PREFABRICATED PLUMBING PARTITION
Henry A. Smid, Jr., Des Plaines, Ill., assignor to Henry Smid Plumbing & Heating Co., Inc., Cicero, Ill.
Filed Oct. 22, 1970, Ser. No. 83,031
Int. Cl. E03c 1/00
U.S. Cl. 4—191 **4 Claims**



A prefabricated plumbing partition adapted for installation in the wall of a building, comprising a plumbing assembly encapsulated in a cellular polyurethane block. Water supply or drain nipples protruding from the block permit two or more such partitions to be joined together by penetrating the plastic of an adjacent block to form an easily transported package unit which requires no additional protective packaging.

3,766,575
VENTED DRAIN FOR RECREATIONAL VEHICLES
Norbert G. Grengs, 5645 Manton Ave., Woodland Hills, Calif.
Filed June 21, 1971, Ser. No. 154,852
Int. Cl. E03d 9/04; B61d 27/00
U.S. Cl. 4—210 **12 Claims**



A vented drain for recreational vehicles and the like which provides the required venting of sink drains without generally requiring more than one hole through the vehicle wall. The vented drain is substantially a one-piece molded plastic member which connects to the sink drain line within the vehicle and conducts drain fluid through the vehicle wall by a first conduit. A second conduit, either surrounding the first conduit or adjacent thereto, provides a flow path for vent air through the vehicle wall and communicates with a vertically disposed baffle stack within the vehicle to define a flow path for vent air of the required height. This prevents drain fluid flow through the vent and provides a source of vent air to the drain conduit to prevent siphoning of the drain trap. Various embodiments of the basic invention are disclosed.

3,766,576

LAVATORY SANITATION BODIES

Selwyn J. Ancel, River Forest, Ill., assignor to Chemtrust Industries Corporation, Maywood, Ill.

Filed July 14, 1971, Ser. No. 162,392
Int. Cl. E03d 9/02
U.S. Cl. 4—231 4 Claims

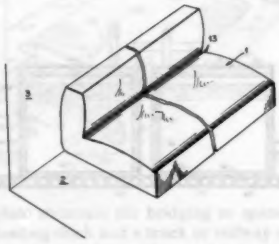
A body for attachment to the rim of the basin of a toilet bowl, or the like, the body including a trough-shaped body portion having apertured end walls, the trough-shaped body portion forming a compartment holding a quantity of a solid soluble treatment material. One side of said trough-shaped body portion terminates in a flexible bowl-engaging means for diverting flush water into said compartment where it makes direct contact with the solid treatment material, thereby to partly dissolve a portion of the material and to enable said dissolved portion to be carried by the flush water into said basin. The other side of the trough-shaped body portion merges with an apertured shield-forming and mounting portion which hooks around the rim of the toilet bowl.

3,766,577

CONVERTIBLE SOFA-BED WITHOUT INTEGRAL SUPPORT STRUCTURE

Joseph B. Stewart, 22 E. 89th St., New York, N.Y.

Filed May 15, 1972, Ser. No. 253,101
Int. Cl. A47c 7/02, 17/14
U.S. Cl. 5—12 17 Claims



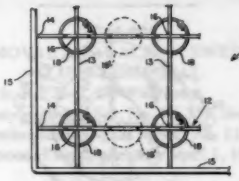
A convertible sofa-type bed without an integral support structure which is formed of a cushion structure adapted to be selectively folded against a corner of a floor and a wall, or the like. The cushion structure includes a central core of firm, but yieldable material, an outer layer of resilient, fluffy material such as foam chips, shredded foam, or the like, and an outer fabric covering over the outer layer of resilient fluffy material. Interposed between the core and the outer covering is at least one flexible dividing elements to divide the fluffy material into a plurality of isolated cells.

3,766,578

COIL SPRING ASSEMBLIES FOR FURNITURE

John E. Toupal, 14 Bear Hill Road, Sherborn, Mass

Filed July 5, 1972, Ser. No. 269,104
Int. Cl. A47c 23/02
U.S. Cl. 5—267 25 Claims



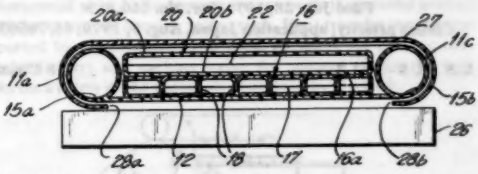
Disclosed herein is a furniture spring assembly including a planar wire mesh base that defines an array of nests each of which accommodate a conventional coiled spring with a uniformly curved end loop. Each of the nests include retaining portions which receive the resilient end loops of the coiled springs only after deformation thereof and thereafter permit the loops to nest by springing back into their original shape. Once nested, the end loops are restrained by the retaining portions from movement in all directions establishing a stable unit.

3,766,579

WATER BED

Eugene H. Shields, 45 Hartman Dr., Hamilton Square, N.J.

Filed June 21, 1971, Ser. No. 155,034
Int. Cl. A47c 27/08; A61g 7/04
U.S. Cl. 5—348 WB 17 Claims



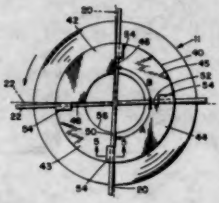
A water bed comprised of an air beam structure which acts as the supporting frame work. The air beam incorporates a base sheet arranged to cooperate with the air beam to retain any water which may escape from the water envelope. An air mattress is positioned within the framework of the air beam and is supported by the base sheet which, in turn, supports a water envelope positioned thereupon. The air mattress is selectively inflatable to control the relative softness or hardness of the water bed. Both the air beam structure and the air mattress are inflatable by conventional means such as for example a vacuum cleaner. The amount of water placed within the water envelope is also adjustable within wide limits. The air beam structure, air mattress and water envelope are so constructed as to assume a rectangular shape when filled. The water bed structure is comparable to conventional structures while employing about one-tenth the amount of water employed in conventional structures. A snug fitting foam insulation sheet covers the structure and acts as an insulation layer thereby avoiding the need for a separate heating structure. The apparatus may be placed upon a conventional foundation or may be fitted within a conventional water bed frame, either with or without the air beam.

3,766,580

PLASTIC SPRING ASSEMBLY CONNECTED TO WIRE FRAME

William R. Curtis, Newark, and David C. Trimble, Yorklyn, both of Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed May 17, 1972, Ser. No. 254,268
Int. Cl. A47c *23/04*
U.S. Cl. 5—351 6 Claims



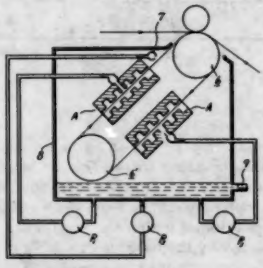
Corrugated plastic springs are substituted for metal coil springs in a chair, sofa, or the like. The bottom of the spring is provided with spaced apart wire retaining means for connecting the springs to the wires. The retaining means are so located that the wires, which have been constructed perpendicular to each other, are bent out of a perpendicular relationship and impart opposite rotational forces on the spring, providing for a secure connection therebetween. The tops of the springs are held in such a manner that each spring may be compressed independently of each other and may move laterally to the extent that they do not abut each other.

3,766,581

PROCESS FOR CONTINUOUSLY TREATING THREAD

Toshiaki Inoue; Shinyo Nakajima, both of Osaka; Tohru Uraya; Toshiaki Kanamori, both of Kobe, and Kazuo Fukuda, Himeji, all of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Sumida-ku, Tokyo, Japan

Filed July 28, 1971, Ser. No. 166,815
Claims priority, application Japan, Aug. 5, 1970, 45/70503
Int. Cl. B05c *9/04*, *9/06*
U.S. Cl. 8—151.2 8 Claims



Thread is treated continuously and effectively with a liquid by passing the thread through a passage of tunnel-like treating device which is arranged alone or in series along a thread passage between one pair of thread delivery rolls, which device comprises a pair of plates, each having on its mutually facing inner surface a plurality of protrusions and grooves, forming the passage therebetween and having one or more inlets for sending the liquid pressurizedly therethrough that are located on the back of the plate. The treating liquid flows through the tunnel-like device, forming vortices in the grooves between the protrusions and thus the vortices contacting with thread accelerate treatment of the thread passing through the passage.

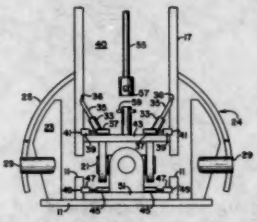
The process and apparatus for treating thread continuously and effectively may be applicable for mercerization, dyeing, scouring, or the like.

3,766,582

OFFSHORE STRUCTURE HAVING A REMOVABLE PIVOT ASSEMBLY

James R. Lloyd, Houston, Tex., and Mark A. Childers, Northridge, Calif., assignors to Esso Production Research Company, Houston, Tex.

Filed Feb. 7, 1972, Ser. No. 224,005
Int. Cl. B63b *35/44*; B65d *87/08*; E02d *17/00*
U.S. Cl. 9—8 P 11 Claims



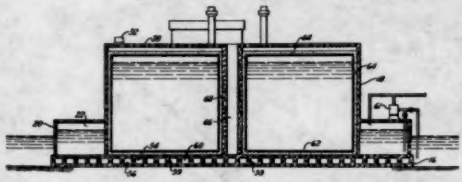
A buoyant tower having a removable pivot assembly is disclosed. The apparatus includes a base provided with means for anchoring it to the bottom of a body of water, an elongated tower that extends upwardly from the base and a buoyancy chamber attached to the tower near its upper end and positioned to remain at least partially submerged beneath the water surface when the tower is installed in a body of water. A primary pivot assembly interconnects the tower and the base and is provided with means for disengaging the same. An auxiliary pivot assembly is included in the tower structure and is situated adjacent the primary pivot assembly. This auxiliary pivot interconnects the tower and base when the primary pivot is disengaged.

3,766,583

OFFSHORE LIQUEFIED GAS TERMINAL

Rex V. Phelps, Tulsa, Okla., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 51,812, July 2, 1970, abandoned. This application June 21, 1972, Ser. No. 264,830
Int. Cl. B63b *35/44*
U.S. Cl. 9—8 P 14 Claims



A portable terminal for liquefied natural gas in which a cryogenic storage tank for liquefied natural gas is mounted on a compartmented concrete base having sufficient buoyancy to float the tank and a gas treating plant is constructed on a deck forming the roof of the storage tank. The gas treating plant may be a plant for liquefying natural gas or a plant for gasification of stored natural gas. A barrier wall extending upwardly from the base near its outer edge is spaced from and surrounds the storage tank to form ballast compartments into which water can be pumped to sink the base of the terminal onto the ocean floor. Means are provided to circulate water through the base to prevent freezing of water below the storage tank.

3,766,584

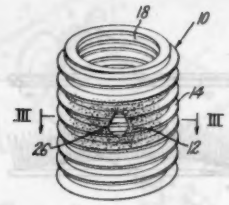
PROCESS OF MAKING SELF-LOCKING THREADED INSERTS

Max F. Dorflinger, Huntington Beach, Calif., assignor to USM Corporation, Boston, Mass.

Division of Ser. No. 167,689, July 30, 1971. This application Dec. 21, 1972, Ser. No. 317,253

Int. Cl. B21d *53/24*

U.S. Cl. 10—86 R **9 Claims**



A self-locking threaded sleeve insert having an external screw thread and an internal screw thread, an aperture through a wall of the sleeve intermediate its ends, a body of normally hard tough resilient resin strongly adherent to the external thread surface in surface portions adjacent to the aperture and a body of normally hard tough resilient resin strongly adherent to the surface of the internal thread. The two bodies of resin may be formed by heating the sleeve and directing a stream of resin particles against the heated surface of the sleeve to deposit resin on the external thread surface adjacent the aperture and to pass through the aperture and deposit resin on the internal thread surface.

3,766,585

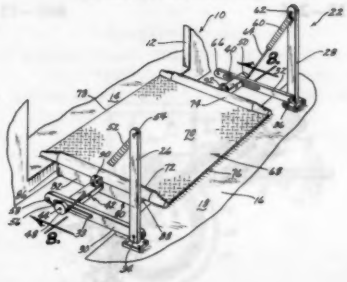
DOCK PLATE

Young Z. Yoon, Des Moines, Iowa, assignor to Woodford Manufacturing Company, Des Moines, Iowa

Filed Apr. 27, 1971, Ser. No. 137,854

Int. Cl. E01d *15/12*

U.S. Cl. 14—72 **6 Claims**



A dock plate structure for bridging or spanning the space between a loading dock and a truck or railway car is disclosed herein. First and second spaced apart supports are secured to the loading dock and extend upwardly therefrom with first and second arms being pivotally secured at one end thereof to the lower ends of the first and second supports respectively. Each of the first and second arms have longitudinal extending slots formed therein which slidably receive opposite ends of a frame member extending between the arms. A dock plate is movably mounted on the frame member so that the dock plate can be moved with respect to the arms. Each of the supports have a spring means secured to the upper end thereof which extends downwardly therefrom. A cable is secured to each of the springs at the lower end thereof with the other end of the cable being secured to the outer end of the associated arm. Pulleys are rotatably mounted on the outer ends of the frame member with the associated cable extending around a portion of the respective pulley. The dock plate may be pivotally moved from an operative position to a storage position and vice versa and the spring means acts as a counter force against the weight of the dock plate. A modified form of the invention is also disclosed wherein a counterweight is employed in place of the spring means.

3,766,586

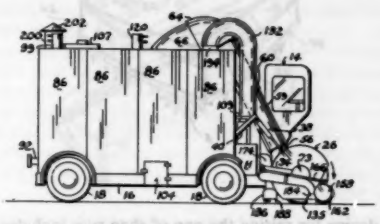
SNOW REMOVAL AND VACUUM SWEEPER WITH SLURRY DISPOSAL

Eli G. Krickovich, R.F.D. 2, De Witt, Iowa

Continuation-in-part of Ser. No. 70,335, Sept. 8, 1970, abandoned, Continuation-in-part of Ser. No. 118,228, Feb. 24, 1971, abandoned. This application Mar. 1, 1972, Ser. No. 231,292

Int. Cl. E01h *1/04, 6/00*

U.S. Cl. 15—83 **7 Claims**



A fluid containing insulated reservoir or tank is mounted on a vehicle chassis having an engine thereon, a hydraulic pressure means and a control cab. A roadway cleaning apparatus, comprising a forwardly open horizontally disposed substantially cylindrical screw conveyor surrounding housing, is pivotally mounted transversely of the forward end portion of the vehicle chassis for vertical pivoting movement about a horizontal axis. A discharge tube connects the central portion of the conveyor housing to the tank. Heat transfer means supported by the chassis extends into the tank for heating contained slurry and melting snow. An agitator within the tank forms a slurry of the materials contained by the tank.

3,766,587

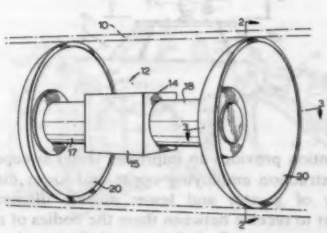
SCRAPER CUPS

Hartley A. French, Willowdale, Ontario, Canada, assignor to Trans-Canada Pipe Lines Limited, Toronto, Ontario, Canada

Filed Mar. 2, 1972, Ser. No. 231,135

Int. Cl. B08b *9/04*

U.S. Cl. 15—104.06 R **5 Claims**



This invention provides a scraper cup for use with a pipeline pig, the scraper cup being generally dished or cotyloid in shape, and having generally a thicker wall to one side of its geometric centre than to the other side of its geometric centre. Thus, the centre of gravity of the scraper cup is displaced from its geometric centre, and the effect of this on the pipeline pig

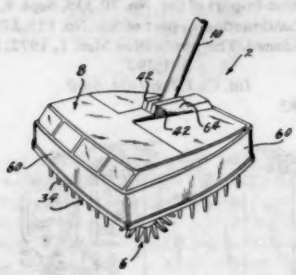
is to impart to the latter a tendency to seek a given horizontal orientation, in which the centre of gravity of the scraper cup is positioned directly below its geometric centre.

3,766,588

DEVICE FOR RAISING THE NAP OF SHAG RUGS

Louis E. Kopecky, 4th & Downing St., Hollister, Mo.

Filed May 20, 1971, Ser. No. 145,330
Int. Cl. A47l *13/00*
U.S. Cl. 15—142 11 Claims



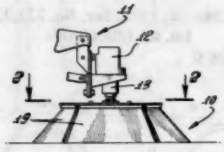
A device for raising the nap of shag rugs includes a chasis mounted on wheels and having resilient grooming prongs projecting downwardly therefrom into the nap of the rug. As the chasis rolls over the rug on the wheels, the grooming prongs engage the nap and lift it, giving the rug a fluffed appearance. The wheels have closely spaced radial teeth and engage the rug backing only at the tips of the teeth. This enables the nap to extend between the teeth so that the wheels do not flatten the nap and leave tracks in the rug.

3,766,589

STREET SWEEPER GUTTER BROOM

Vincent E. Arenas, Norwalk, Calif., assignor to Wayne Manufacturing Company, Pomona, Calif.

Filed Nov. 22, 1971, Ser. No. 200,931
Int. Cl. A46b *13/02*
U.S. Cl. 15—180 10 Claims



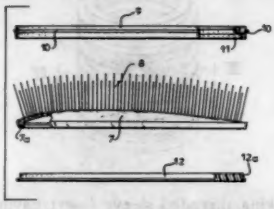
The invention provides an improved street sweeper gutter broom construction employing upper and lower disc plates respectively of greater and lesser outside diameters and spaced apart to receive between them the bodies of replaceable broom segments. Radial inverted T-shaped members between the plates and attached to the upper disc receive and support the brush segments during their insertion between the plates, the segments in assembled condition being held against radial displacement by bolts passing through the plates and serving also to interconnect them. The segments in assembled position are driven by the T-shaped members attached to the upper plate.

3,766,590

BRUSH WITH SET-IN BRUSHING FIXTURE

Jean Louis Wachtel, Selestat, France, assignor to Celluloid S.A., Selestat, France

Filed Nov. 15, 1971, Ser. No. 198,636
Claims priority, application France, Nov. 27, 1970, 7042749
Int. Cl. A46b *3/20*
U.S. Cl. 15—186 3 Claims



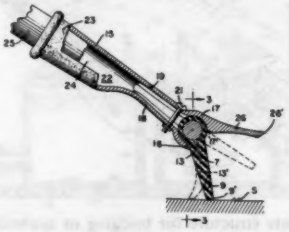
The brush comprises a rigid support, a brushing fixture formed essentially of a bulging pad of resiliently deformable material, a retaining ring surrounding the pad and adapted to be engaged into the said support, said ring being provided with an external peripheral rib co-operating with an internal peripheral slot of the said support and rigid sustaining means upon which the peripheral edge of the pad bears when the said ring is engaged into the said support.

3,766,591

SQUEEGEE IMPLEMENT

Frank S. Soito, 3029 Coolidge Ave., Oakland, Calif.

Filed July 8, 1966, Ser. No. 563,848. The portion of the term of this patent subsequent to June 23, 1988, has been disclaimed.
Int. Cl. A47l *1/06, 13/11*
U.S. Cl. 15—245 5 Claims



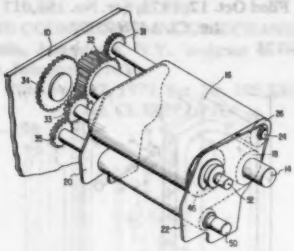
A squeegee implement having an elongated homogeneous body of uniform cross-section providing integrally related head and blade portions of substantially like working length, with the head portion uniformly tubular and complementarily mounting in its bore a relatively rigid reinforcing bar providing therealong a radial rib part extending into the blade portion for controlledly limiting transverse deflections thereof, with said head portion being adapted for direct use as a handle or for mounting a separate handle stick means thereon, as disclosed.

3,766,592

DRUM CLEANING DEVICE FOR AN ELECTROPHOTOGRAPHIC DUPLICATOR

Katsuo Suzuki, Tokyo, Japan, assignor to Fuji Xerox Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan

Filed Dec. 2, 1971, Ser. No. 204,081
Int. Cl. G03g 15/00
U.S. Cl. 15—256.51 5 Claims



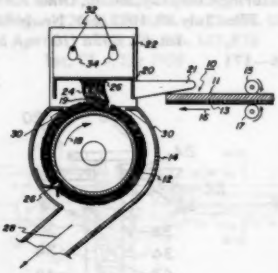
A drum cleaning device for an electrophotographic duplicator including (1) web core supporting shafts disposed substantially parallel to the axis of the drum, (2) a pressure roller, (3) winder shafts, the web being connected from the web core supporting shafts to the winder shafts via the pressure roller which presses the web to the drum to thereby clean the surface of the drum, (4) first and second side plates between which are connected the web core supporting shafts, the pressure roller, and the winder shafts so as to constitute a cleaning unit, and (5) means for removably mounting the cleaning unit with respect to the drum so that the entire cleaning unit can be operatively positioned with respect to the drum or removed therefrom for maintenance.

3,766,593

CLEANING APPARATUS FOR INSULATING SURFACES

Gunter E. Becker, Manhattan Beach, and Joseph F. Santoro, Glendora, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed July 2, 1971, Ser. No. 159,315
Int. Cl. A47l 5/38, 9/04
U.S. Cl. 15—308 5 Claims



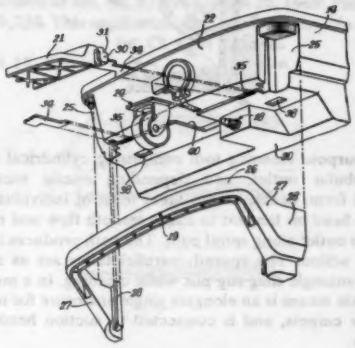
Apparatus for cleaning residual particulate material remaining after transfer of a developed image from an insulator. The apparatus comprises rotating and stationary brushes for cleaning both surfaces of the insulator, both brushes enmeshing after the cleaning cycle to provide a brush self-cleaning action for the stationary brush. The apparatus is designed such that air flow is at a maximum at the point where the particulate material would normally be centrifuged out of the brush housing, thereby minimizing leakage of the particulate material despite a gap between the insulator and the brush housing.

3,766,594

HANDLE INTERLOCK FOR CANISTER VACUUM CLEANER

George A. Westergren, White Bear Lake; David G. Koland, Sandstone; Thomas F. Eggert, Richfield, and Dale R. Frondal, Cottage Grove, all of Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed June 13, 1972, Ser. No. 262,357
Int. Cl. A47l 5/36, 9/32
U.S. Cl. 15—327 R 11 Claims



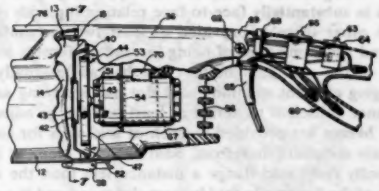
A vacuum cleaner construction wherein a handle for carrying or moving a canister, a wheel or caster for movably supporting a portion of the canister during use, and a foot pedal for permitting control of the vacuum cleaner motor by the user's foot are mounted to a base of the canister and include cooperating interlocking shoulders for providing maintained association thereof. The construction is arranged to permit disassembly and reassembly when desired.

3,766,595

FILTER BAG CONDITION SIGNAL FOR VACUUM CLEANER

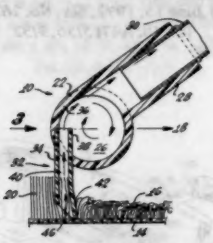
Bruno M. Valbona, Avon, Robert J. Emmons, Manchester, and Maurice P. Samuelian, West Hartford, all of Conn., assignor to Dynamics Corporation of America, New York, N.Y.

Division of Ser. No. 83,300, Oct. 23, 1970, Pat. No. 3,667,084.
This application Nov. 19, 1971, Ser. No. 200,627
Int. Cl. A47l 5/00
U.S. Cl. 15—339 4 Claims



A vacuum cleaner appliance in which a warning signal to empty the filter bag is actuated by a predetermined temperature rise in the blower motor that is occasioned when the rate of flow of motor coolant air through the filter bag is reduced below a predetermined level.

3,766,596
VACUUM CARPET COMB FOR SHAG RUGS
Raymond W. Clewett, 7069 Fernhill Drive, Malibu, Calif.
Filed Jan. 28, 1972, Ser. No. 221,654
Int. Cl. A47l 9/06
U.S. Cl. 15—397 14 Claims

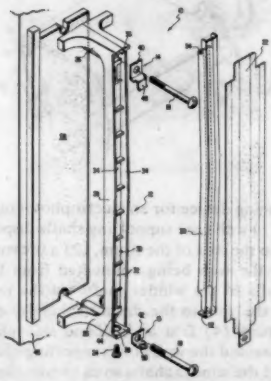


Dual purpose cleaning tool comprising cylindrical suction head, tubular outlet, and depending nozzle means. In preferred form, nozzle means takes form of individual tubes joined to head on tangent to cause smooth flow and rotation on way to outlet along spiral path. The path produces injector pumping action. The spaced, parallel tubes act as rake or comb to untangle shag rug pile while cleaning. In a modification, nozzle means is an elongate single enclosure for use with short pile carpets, and is connected to suction head in the same way.

3,766,597
DOUBLE SHOWER ROD
James A. Ford, and Alan A. Ford, both of Sturgis, Mich., assignors to Kirsch Company, Sturgis, Mich.
Filed June 1, 1972, Ser. No. 258,607
Int. Cl. A47h 13/00
U.S. Cl. 16—87.4 R 3 Claims

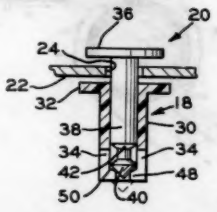
Curtain rod having at least two circumferentially spaced slots arranged therein. In a rod for supporting at least two curtains in substantially face-to-face relationship with respect to each other there is provided at least two circumferentially spaced slots, one thereof being located preferably at the bottom of the rod. Said bottom slot has an internally located bridging element spanning said slot and spanning same by a distance sufficient to define at least one flange adjacent said slot. Means are provided in each of said slots for supporting curtain members therefrom. Said bridging element is spaced inwardly from said flange a distance less than the extent of each of the hangers in said bottom slot measured in a direction parallel to the axis of said rod. Thus, if a bottom curtain is moved by grasping same at a point adjacent the hangers, said curtain may be moved easily. If, however, said curtain is moved by grasping same at a point spaced substantially from said hangers, same will tip and bear against said bridging element to provide a substantial resistance against such movement. Further, a hanger is provided utilizing both a hook and an eyelet for the suspension of curtains or draperies having either grommets or hooks, respectively.

3,766,598
HANDLE ASSEMBLY
Edward H. Roberts, Jeffersontown, Ky., assignor to General Electric Company, Louisville, Ky.
Filed Oct. 12, 1971, Ser. No. 188,017
Int. Cl. A47b 95/02
U.S. Cl. 16—125 1 Claim



A handle assembly includes a relatively small infrangible insert which performs the dual functions of isolating a relatively large frangible hand pull structure from excessive pull forces and providing support for a decorative, flaccid trim structure. A pair of insert mounting clips coacting among the usual closure mounting fasteners, the frangible hand pull and the insert permit the insert to be assembled with the hand pull with a single insert mounting fastener, and additionally, spread the compressive loads applied to the frangible hand pull by the closure mounting fasteners.

3,766,599
BUTTON HINGE
Myron E. Ullman, Jr., Canfield, Ohio, assignor to Mullins Manufacturing Company, Salem, Ohio
Filed July 30, 1971, Ser. No. 167,615
Int. Cl. E05d 1/06
U.S. Cl. 16—171 15 Claims



A hinge assembly is disclosed for releasably and pivotally interconnecting a closure member with support means therefor. The hinge assembly includes a bracket member adapted to be mounted on the support means and which is provided with a flange having an aperture therethrough. The closure member has an opening adapted to be aligned with the bracket aperture, and a sleeve component of resilient material such as nylon is adapted to be inserted through the opening in the closure member and is supported thereby. A headed pin is in-

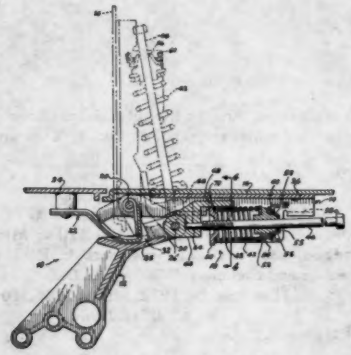
serted through the bracket aperture and thence into the sleeve component. The corresponding inner ends of the sleeve and pin are provided with releasably interengagable projection and groove means which provide for the sleeve to releasably restrain displacement of the pin means relative to the hinge assembly. When the pins are removed from a pair of such hinge assemblies associated with opposite ends of a closure member, the latter is released for removal from the support means.

3,766,600

LID COUNTERBALANCE MECHANISM

Carl H. Little, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,586
Int. Cl. E05f 1/12
U.S. Cl. 16—190 **8 Claims**



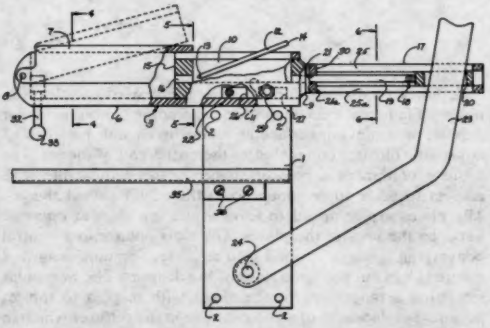
A counter balance mechanism including a cabinet mounted stationary hinge part; a movable hinge part pivotally mounted on the stationary hinge part and connected for conjunctive vertical swinging movement with a cabinet lid; and a counter balance assembly including an adjustable compression spring arranged to bear adjacent its opposite ends on the hinge parts for establishing a moment tending to essentially counter balance torque effects of gravity on the lid throughout substantially the whole of the vertical swinging movements thereof.

3,766,601

MEAT ASSEMBLING DEVICE

Robert N. Heighberger, 22230 Euclid Ave., Euclid, Ohio

Filed Apr. 21, 1971, Ser. No. 135,876
Int. Cl. A22c 7/00
U.S. Cl. 17—1 R **4 Claims**



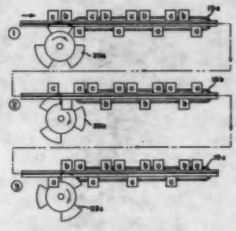
The disclosure hereof is of a device for assembling meat chunks or similar particles or pieces of meat so that the same are thereafter in larger pieces whether they be retained in their assembled condition by the insertion of a stick or by other means, the device involving a housing in which the meat is deposited, means for compressing the meat, and means for inserting a stick through the compressed meat and thereafter the ejection of the meat from within the housing.

3,766,602

APPARATUS FOR EVISCERATING POULTRY

Gary J. Bottomley, Box 88, Wilkesboro, N.C.; William M. Nichols, Rt. 4, Box 654, North Wilkesboro, N.C.; Clyde E. Watkins, Box 125, Millers Creek, N.C., and Larry D. Wilson, Kenleigh Cir., Ken Acres, Wilkesboro, N.C.

Division of Ser. No. 818,946, April 24, 1969, Pat. No. 3,559,233. This application Aug. 28, 1970, Ser. No. 68,056
Int. Cl. A22c 21/00
U.S. Cl. 17—11 **5 Claims**



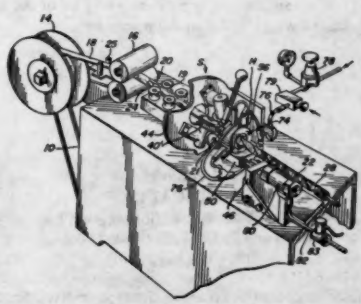
A system for diverging, sequentially, predetermined series of birds from a predetermined path of travel to prescribed paths of travel to present each predetermined series of birds to respective inspection stations longitudinally spaced from each along an eviscerating line. Upper and lower spaced guides cooperate with a drive wheel to convey shackles, of a chicken eviscerating line, to one of two sides of the guides to increase the spacing between shackles presented to an inspection station.

3,766,603

SHIRRED TUBING, METHOD AND APPARATUS FOR MAKING SAME

Algimantas P. Urbutis, Chicago; Bernard H. Schenk, Hinsdale; Joseph J. Risany, La Grange Park, and Walter V. Marbach, Palos Heights, all of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 765,711, May 31, 1968, which is a division of Ser. No. 418,506, Dec. 15, 1964, Pat. No. 3,397,069. This application Mar. 5, 1970, Ser. No. 16,825
Int. Cl. A22c 13/00
U.S. Cl. 17—42 **13 Claims**



A method and apparatus are provided for uniformly compressing and compacting a length of flexible, tubular sausage

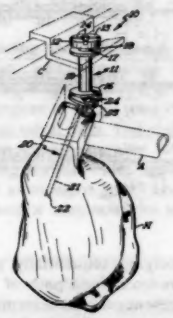
casing into a coherent, shirred casing stick which, from end to end, exhibits circumferential uniformity, is substantially straight and has an uninterrupted, uniform bore.

3,766,604

HINGED SUSPENSION DEVICE

John Gilmer Lunn, Austin, Minn., and Gerald Loren Helgeson, Algona, Iowa, assignors to Geo. A. Hormel & Company, Austin, Minn.

Filed Dec. 26, 1972, Ser. No. 318,566
Int. Cl. A22c *15/00*
U.S. Cl. 17—44.2 **7 Claims**



A hinged suspension device is attached to embedded bones in a chunk of meat and provides a means for suspending the chunk of meat from a conveyor and from coupling means in a deboner unit. The suspension device includes a cylindrical body having a slotted head at one end and an end flange at the other end. An intermediate flange on the body cooperates with the end flange and head to define a pair of recessed areas which are engaged by conveyors and coupling means on the deboning units during the various steps of the deboning operation. An elongate threaded pin is hinged to the body by interconnected eyelets to permit limited swinging movement of the pin in substantially any direction through an arc of approximately 20°. The pin is of a length to extend through and immobilize the articulated joint between the embedded bones. The universal type joint utilized in this suspension device permits unsymmetrical large chunks of meat to swing freely during the deboning operation and also allows the cylindrical body of the device to remain substantially plumb during all of the handling steps associated with the deboning operation.

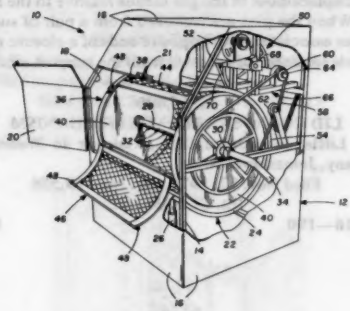
3,766,605

FISH SCALER

Lloyd G. Burns, 1461 Camille St., Shreveport, La.

Filed June 7, 1971, Ser. No. 150,415
Int. Cl. A22c *25/02*
U.S. Cl. 17—64 **1 Claim**

A fish scaler comprises a mesh drum supported for rotation about a stationary tube. The drum is enclosed in a housing having a wide front opening and includes a door supported for pivotal movement outwardly through the front opening in the housing. Structure is provided for rotating the drum at low speed so that fish are carried upwardly and then slide and gently roll and tumble downwardly in the drum. Low pressure water is directed through the tube and is discharged into the drum to wash scales and other debris out of the drum.

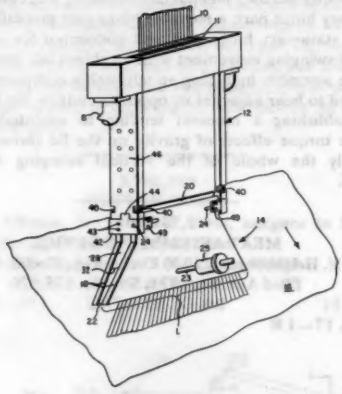


3,766,606

APPARATUS FOR FORWARDING TOW

Woodrow W. Piper, MT. Juliet, and Arthur Michael Porter, Madison, both of Tenn., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 19, 1972, Ser. No. 245,350
Int. Cl. D01d *11/02*
U.S. Cl. 19—65 T **5 Claims**



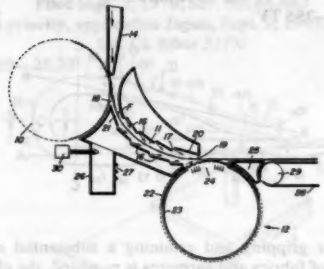
A fluid jet apparatus for receiving a ribbon of parallel continuous filaments, then heating and spreading the filaments for deposit on a moving surface as a nonwoven web includes an adjustable diffuser connected to the outlet end of the jet. The diffuser comprises a pair of spaced plates, adjustable with respect to each other, mounted to the outlet end of the jet. The plates are arranged to form aspiration slots at one end between the jet and the plates. The slots open into a central converging passage formed by the plates for confining and diverting gas out the open sides of the diffuser. The particular structural arrangement of the plates with respect to the jet permits development of static pressure in the diffuser which in turn causes a large percentage of jet fluid to exit from the open edges of the diffuser, generally parallel to the moving laydown surface, while less fluid accompanies the filaments to the laydown surface to reduce web disturbance.

3,766,607

APPARATUS FOR TRANSFERRING AND COMPACTING FIBER MATERIAL

Wilhelm Jende, Tostedt, Germany, and Kurt Krosswang, Graz, Austria, assignors to Curlator Corporation, Macedon, N.Y.

Filed Aug. 24, 1971, Ser. No. 174,438
Int. Cl. D01g 25/00
U.S. Cl. 19—156.3 6 Claims



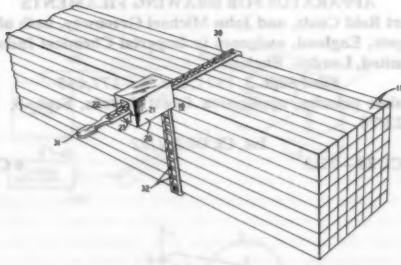
The upper and lower walls of the air duct which conveys fibers from the lickerin to the condenser in a machine for forming random fiber webs are serrated; and the forward side of each serration is provided with apertures through which jets of air operate to compact, stabilize, and advance the airborne fibers which pass through the duct. The jet openings on the forward sides of successive serrations or teeth are preferably arranged in staggered fashion relative to one another.

3,766,608

HARNESSING DEVICE

Robert B. Fay, Medway, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed June 9, 1972, Ser. No. 261,506
Int. Cl. B65d 63/00
U.S. Cl. 24—16 PB 29 Claims



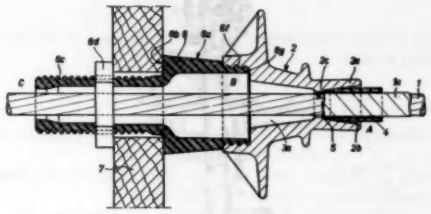
A harnessing device formed by a locking head and an attached, apertured strap. The head contains a longitudinal guide channel for receiving the strap, after encirclement of items to be harnessed, and an internal locking tang. The latter is deflected with respect to relatively narrow auxiliary channels on opposite sides of the guide channel. One of the auxiliary channels receives the locking tang during the harnessing of the items; the other auxiliary channel contains a stop against which the locking tang becomes abutted in planar engagement by the reverse thrust of the harnessed items.

3,766,609

ANCHORING BODY FOR KEY ANCHORING TENSION MEMBERS

Antonio Brandestini, 60, Alte Landstrasse, Kusnacht; Hans-Rudolf Siegwart, Kilchberg, and Gerard Welbergen, Zurich, all of Switzerland, assignors to said Brandestini, by said Siegwart and Welbergen, a part interest

Filed Oct. 1, 1969, Ser. No. 862,774
Claims priority, application Switzerland, Mar. 26, 1969, 4611/69
Int. Cl. F16g 11/00
U.S. Cl. 24—126 1 Claim



In an anchorage for tendons, such as strands, an anchorage body for anchoring tendons with wedges, having a central passage or bore for the tendon, at least one part or section of which passage widening conically from the inlet end to the outlet end in order to form a seat for wedges, a first section of said passage, adjacent to the inlet opening of the passage, tapering conically in order to form a seat for a combined centering- and sealing-element to be inserted between said tendon and said anchorage body.

3,766,610

WEDGE LOCKING DEVICE

Arden L. Thorsbakken, 106 S. Main St., River Falls, Wis.

Filed June 29, 1971, Ser. No. 158,000
Int. Cl. F16g 11/00
U.S. Cl. 24—115R 7 Claims

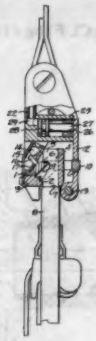
A locking device for locking lines including bands, cables, ropes or the like utilizing a wedge lock principle. The device is made so that once the line to be locked into position is placed in the locking device, the locking member or key cannot be removed. This makes the device suitable for locking all sorts of lines or flexible elongated members because the locking member will not be lost.

3,766,611

LOCKING LEVER RELEASE FOR STRAP CONNECTOR

John A. Gaylord, Greenbrae, Canada, assignor to H. Koch & Sons, Inc., a division of Global Systems, Marin County, Calif.

Filed Mar. 15, 1972, Ser. No. 234,735
Int. Cl. A44b *19/00*
U.S. Cl. 24—230 A 3 Claims



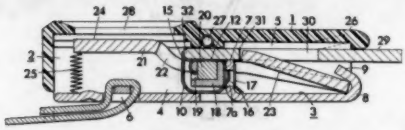
On strap connectors wherein the prongs of a male member are inserted into pockets of the female member and are held in place by a rocking shaft in notches in the prongs, which rocking shaft is cut away so that it can be turned out of said notches into an out of the way position for releasing the prongs, and wherein a manipulating lever is provided for rocking said shaft into and out of the notches of said prongs, and wherein also gas pressure actuated means are provided for rocking the shaft into prong releasing position, and wherein a locking lever is provided to prevent the manipulation of said manipulating lever, a gas actuated plunger having a projection bearing against said locking lever and actuated simultaneously with the gas actuated rocking of said shaft, for pushing the locking lever into releasing position.

3,766,612

SEAT BELT BUCKLE PROVIDED WITH A SWITCH MEANS

Hiroo Hattori, Oaza-Rokuwa, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi Prefecture, Japan

Filed May 2, 1972, Ser. No. 249,716
Int. Cl. A44b *11/25*; B60q *1/00*
U.S. Cl. 24—230 A 1 Claim



A new and improved arrangement of a seat belt buckle mainly comprises a magnetic reed switch and a permanent magnet which are juxtaposed to each other in such a manner that the reed switch is subject to a magnetic field of the permanent magnet with a space provided therebetween. When, with this arrangement, the seat belt is attached to the vehicle occupant with a tongue plate thereof inserted into the space and automatically locked at the position by a locking means, the magnetic field established between the reed switch and the magnet is obstructed by the tongue plate situated therebetween so that the reed switch is actuated to open or close.

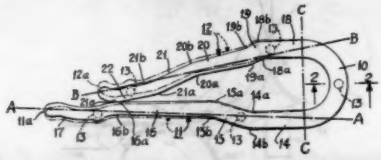
In particular, the buckle according to the present invention may be arranged to dispose the reed switch in a circuit of any electrically constructed apparatus such as an acceleration switch.

3,766,613

FABRIC AND GARMENT CLIP

Kurt W. Merfeld, Manhasset, N.Y., assignor to Kunreuther and Merfeld, New York, N.Y.

Filed Oct. 2, 1972, Ser. No. 293,820
Int. Cl. A44b *21/00*
U.S. Cl. 24—255 TV 9 Claims



A clip for gripping and retaining a substantial range of thicknesses of fabrics and garments is provided, the clip being of unitary structure fabricated from a resiliently deformable material and comprising a generally U-shaped crosshead, a long leg extending horizontally from one side of the crosshead and a short leg extending from the other side of the crosshead angularly disposed toward the long leg with the legs and the crosshead being in a common plane, each of the legs being of irregular contour within the plane and having alternating divergent and convergent sections with respect to center lines passing through the legs.

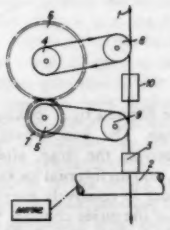
The irregular contours of said legs are preferably such as to dispose sections thereof adjacent the leg ends in parallel relation for linear engagement with opposed fabric surfaces when said legs have been flexed slightly apart, and the irregular contour of said legs further being such that, as the legs are flexed beyond said position to provide parallel leg sections in accommodating increased thicknesses of fabric, there will continuously be at least one point of fabric contact by one leg between at least two spaced points of fabric contact by the other leg until the fabric thickness exceeds the inner diameter of said crosshead.

3,766,614

APPARATUS FOR DRAWING FILAMENTS

Robert Reid Coats, and John Michael Greenway, both of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Sept. 3, 1971, Ser. No. 177,695
Claims priority, application Great Britain, Sept. 3, 1970, 42,223/70
Int. Cl. D02j *1/22*
U.S. Cl. 28—71.3 6 Claims



Apparatus for continuously drawing a filament comprising a filament advancing roll adapted for rotation under the speed

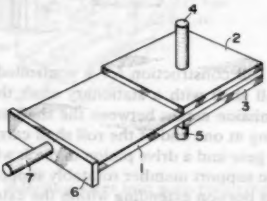
controlling influence of a motor and a plurality of other rolls each adapted for rotation under the speed controlling influence of surface contact with the advancing filament before it reaches the advancing roll at least two of such plurality of rolls being coupled for rotation at a predetermined surface speed ratio corresponding to a required draw ratio.

3,766,615

METHOD OF POLARIZING PIEZOELECTRIC ELEMENTS

Masao Shimizu, Tokyo, Japan, assignor to Denki Onkyo Company, Limited, Tokyo, Japan

Filed Sept. 2, 1970, Ser. No. 68,883
Claims priority, application Japan, Sept. 9, 1969, 44/71148
Int. Cl. H04r *31/00*
U.S. Cl. 29—25.35 **2 Claims**



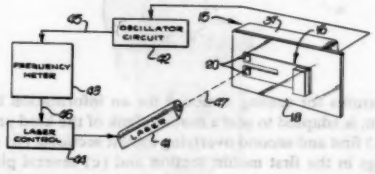
A piezoelectric element is polarized by applying electroconductive rubber pads on the opposite surfaces of the low voltage driving portion and on the end surface of the high voltage output portion and by applying DC polarization voltages across these pads while the element is being maintained in insulating oil.

3,766,616

MICRORESONATOR PACKAGING AND TUNING

Juergen H. Staudte, Anaheim, Calif., assignor to Statek Corporation, Orange, Calif.

Filed Mar. 22, 1972, Ser. No. 237,132
Int. Cl. B01j *17/00;* **H04r** *17/00*
U.S. Cl. 29—25.35 **6 Claims**



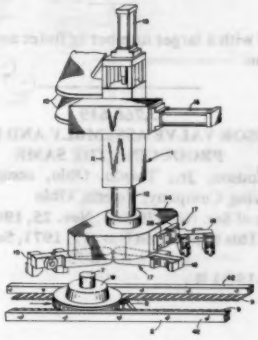
A piezoelectric tuning fork microresonator advantageously is mounted in a package having a transparent region through which the microresonator can be tuned using a laser beam selectively to remove portions of weights provided on the tuning fork tine ends. The laser, located external to the package, may be controlled automatically in response to the output of an oscillator circuit using the microresonator as a frequency standard. The package also may house electronic microcircuitry and may include a capacitor using the package wall as a dielectric. When used with the microresonator in an oscillator circuit, the capacitor enables the frequency to be adjusted slightly by shorting together capacitor plate sections on the outside of the package. A batch fabrication technique is disclosed for automatically assembling many such packages on a single scored, optionally transparent substrate.

3,766,617

WORKPIECE LOADER AND UNLOADER

Peter E. Forster, Brecksville, and John A. Adamcik, Maple Heights, both of Ohio, assignors to The Motch & Merryweather Machinery Company, Cleveland, Ohio

Filed Oct. 18, 1971, Ser. No. 190,173
Int. Cl. B21d *43/00*
U.S. Cl. 29—33 P **10 Claims**



Workpiece loaders and unloaders for use as with a multistation machining line including a series of machine tools and a workpiece conveyor therealong operative to transport workpieces for loading into the respective machine tools and to receive workpieces unloaded from the respective machine tools for transport to successive machine tools, each workpiece loader and unloader being equipped with a pair of workpiece clamps and being operative upon each 180° indexing of the clamp •upport structure thereof to transfer a workpiece from the conveyor to the associated machine tool and to transfer a workpiece from the associated machine tool to the conveyor. When the workpieces have been transferred as aforesaid the loader and unloader clamps are opened for chucking of the workpieces in the respective machine tools and for transport of the workpieces on the conveyor to the succeeding work stations.

A characterizing feature of the present workpiece loader and unloader is its simplicity and compactness to minimize the center-to-center distance between the diametrically opposed workpiece clamps thus to minimize inertia forces. The loader and unloader herein is further characterized in that the clamps thereof are hydraulically actuated for rapid opening and closing movements with provision for cushioning such movements to reduce shock load on the equipment.

3,766,618

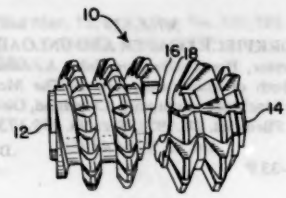
COMPOSITE HOB

William Leo Janninck, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 22, 1972, Ser. No. 228,119
Int. Cl. B26d
U.S. Cl. 29—103 B **5 Claims**

A compound hob having a plurality of separable sections including a roughing section and a trailing section. Each section including a plurality of cutting teeth arranged along a helix

with the helix angle of the roughing section being the same as the helix angle of the finishing section. The roughing section



being formed with a larger number of flutes and teeth than the trailing section.

3,766,619

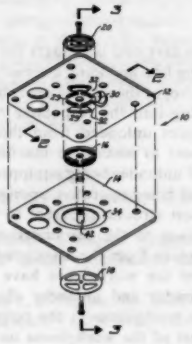
COMPRESSOR VALVE ASSEMBLY AND METHOD OF PRODUCING THE SAME

Sharon J. Hudson, Jr., Toledo, Ohio, assignor to Sharon Manufacturing Company, Toledo, Ohio

Division of Ser. No. 879,863, Nov. 25, 1969, Pat. No. 3,643,687. This application Nov. 17, 1971, Ser. No. 199,550

Int. Cl. B21d *53/00*

U.S. Cl. 29—157.1 R **5 Claims**



A laminated valve plate assembly for a reciprocable piston compressor said plate being of the type formed substantially by stamping processes and characterized by being only two laminations thick and having at least some of the port defining surfaces which are smooth and have compound curvatures that are inclined with respect to the plane of the plate to provide a less turbulent flow through the ports and to reduce the required thickness of the finished valve plate. The outlet end portions of both the intake and exhaust means comprise continuous slots formed by stamping processes and stamped parts while the inlet end portions of these port means comprise a plurality of discontinuous slots. Perhipheral recesses are formed around the top and bottom surfaces of the plate by shearingly depressing the edges thereof to eliminate burrs and to protect the edges of the lapped top and bottom surfaces from damage due to rough handling prior to the installation of the valve assembly between the cylinder head and cylinder block of the compressor. The disclosure also includes novel methods for forming the above mentioned structures.

3,766,620

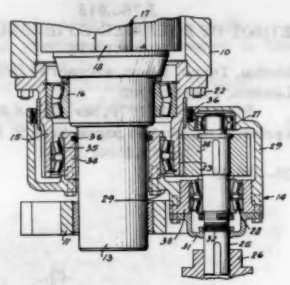
CONTROLLED DEFLECTION ROLL DRIVE

Arnold J. Roerig, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Aug. 8, 1972, Ser. No. 278,737

Int. Cl. B60b *15/16*

U.S. Cl. 29—115 **10 Claims**



A driven roll construction for a controlled deflection roll having a roll shell with a stationary shaft therein and fluid force transmission means between the shaft and shell with an extension ring at one end of the roll shell carrying an annular driving ring gear and a drive pinion in mesh with the ring gear with a pinion support member rotatably supporting the pinion and having a portion extending within the extension ring with a bearing between the extension ring and pinion support member to stabilize and carry the pinion relative to the ring gear.

3,766,621

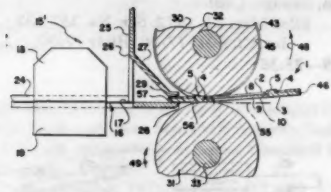
MOUNT SEALING APPARATUS

David N. Schwardt, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 10, 1971, Ser. No. 197,426

Int. Cl. B23p *19/00, 11/00*

U.S. Cl. 29—200 B **4 Claims**

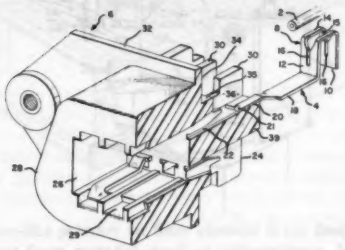


Apparatus for sealing a mount for an information bearing medium, is adapted to seal a mount blank of the kind provided with (a) first and second overlying mount sections, (b) several openings in the first mount section and (c) several pins projecting from the second mount section to respectively extend through the several openings. The apparatus includes a pin deforming roller member and a mount back-up roller member which are supported in spaced opposed relation for enabling the first and second overlying mount sections to be moved therebetween in a manner such that the second mount section will be disposed in abutment against the mount back-up roller member and the several pins will be deformed respectively over the several openings by the pin deforming roller member, to seal the mount. The first and second overlying mount sections are advanced to the roller members, first contracting the mount back-up roller member in an orientation causing such mount sections to be (1) guided by the mount back-up roller member toward the pin deforming roller member and (2) thereafter moved between the roller members.

3,766,622
AUTOMATIC APPARATUS FOR ATTACHING WIRES TO TERMINALS

Ronald Carl Brehm, Carlisle, Robert Alvin Long, Harrisburg, and William Roderick Over, Harrisburg all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 1, 1972, Ser. No. 230,820
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 MW **11 Claims**

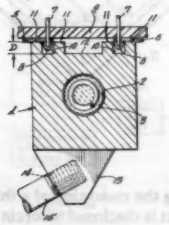


Apparatus for inserting wires into wire-receiving portions of terminals in an electrical connector comprises wire severing and inserting means for trimming the wire end and inserting the trimmed end into wire receiving portion of a terminal. The connector, in which the terminals are contained, is held on a carriage which is indexed during each operating cycle so that each terminal is presented to the inserting means for reception of a wire.

3,766,623
UNSOLDERING TOOL FOR PRINTED CIRCUIT BOARD USE

Julius Lerner, Broomall, and Robert Mayer, Ardmore, both of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Aug. 28, 1972, Ser. No. 284,291
Int. Cl. B23p *19/00*
U.S. Cl. 29—203 B **10 Claims**

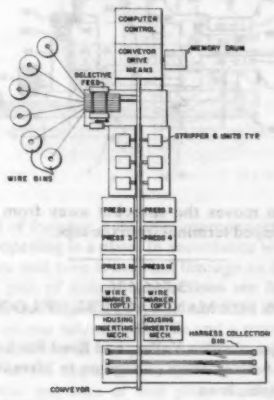


A tool for unsoldering, from a printed circuit board, a component (socket, or integrated circuit) having two spaced, parallel rows of pins which are soldered to the board. The tool comprises a metallic block having a length substantially equal to that of the component being removed and having formed in one face thereof two parallel, continuous grooves of U-shaped transverse cross-section which are adapted to respectively receive the two rows of pins. The block is heated by means of a cartridge heater which extends parallel to the grooves.

3,766,624
AUTOMATIC LEAD MAKING AND WIRING MACHINE

Robert Karl Grebe, and Earl Raymond Kreinberg, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 13, 1969, Ser. No. 849,707
Int. Cl. H01r *11/08*
U.S. Cl. 29—203 MW **2 Claims**



The disclosure relates to an automatic lead making and wiring machine wherein a controlled device is utilized to select wire of predetermined size or color and feeds same into the machine wherein the wire is cut to a predetermined length. A wire is then sequentially fed to a plurality of operating units wherein the wire is stripped on one or both ends thereof, the amount of stripping being variable and depending upon the number of stripper units available. The wire is then automatically fed to a plurality of presses wherein terminals can be placed on one or both ends at the point of stripping, the control device further being capable of preselecting any one of a plurality of terminals to place on either or both ends of the stripped wire. The wire can then be marked if desired and the wires can then be positioned into a panel board or the like at predetermined terminal locations thereof. The result would be a completely wired panel board with wires therein having terminals thereon and being of predetermined wire size and predetermined wire color. As an alternative, the stripped and terminated wires need merely be placed on a conveyor or other such device at the termination of the operation.

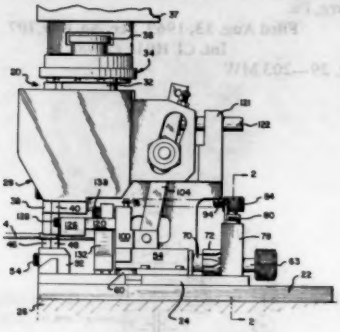
3,766,625
APPARATUS FOR APPLYING TERMINALS MOUNTED ON A TAPE TO WIRES

Earl William Wagner, Annville, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed July 21, 1972, Ser. No. 274,035
Int. Cl. H01r *43/04*; B21d *11/04, 31/02*
U.S. Cl. 29—203 DTS **3 Claims**

Apparatus for applying terminals which are mounted on a flexible tape to wires comprises crimping dies and a sprocket for advancing the tape to position the leading terminal in alignment with the dies. An actuating means is provided which

moves the dies towards and away from each other and which also indexes the sprocket thereby to feed the tape. The actuating means also moves the sprocket away from the dies to remove the crimped terminal from the tape.

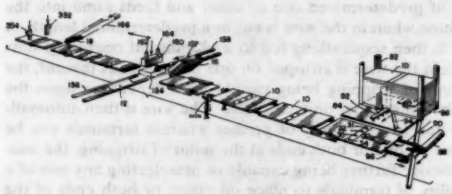


3,766,626

APPARATUS FOR MANUFACTURE OF LOOSE-LEAF BINDER

Clarence B. Mjos, Golden Valley, and Reed Stockwell, Columbia Heights, both of Minn., assignors to Meredith Corporation, Des Moines, Iowa

Filed Dec. 13, 1971, Ser. No. 207,367
Int. Cl. B23p *19/04, 19/00*
U.S. Cl. 29—208 D **35 Claims**



An entirely automatic apparatus for fabricating loose-leaf binders includes a first station for receiving the binder cover and for punching holes in the cover. The cover is then transported to a second station where it is automatically combined with spine members which are fastened to the cover. Then, the cover passes to a third station where a metal is positioned against the spine of the binder. Thence, the binder passes through a fourth station which fastens the metal to the spine members.

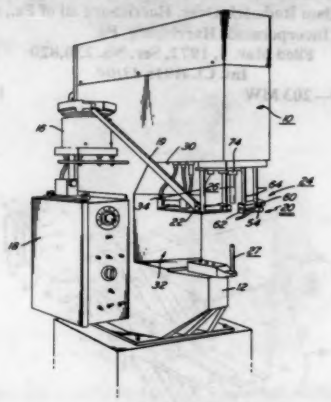
3,766,627

STUD INSERTION APPARATUS FOR AN AUTOMATIC MACHINE OR PRESS

Robert K. Headman, Coopersburg, Pa., assignor to Penn Engineering & Manufacturing Corp., Danboro, Pa.

Filed July 31, 1972, Ser. No. 276,776
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 C **15 Claims**

This invention relates to an improved stud insertion apparatus for an automatic machine or press in which the stud is transported to a position in abutment with the face of the punch, depending centrally therefrom, and retained by the punch assembly. Thereafter, while the stud is so retained by the punch assembly, the stud holder assembly disengages from the stud and retracts from under the path of the punch assembly leaving the stud suspended from the face of the punch and ready to be inserted into the work piece by the punch.

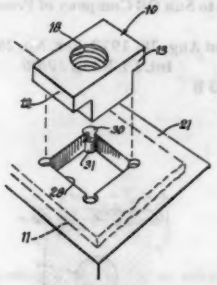


3,766,628

DIE FOR SECURING FASTENERS TO SHEET MATERIAL

William L. Grube, Lake Bluff, Ill., assignor to MacLean-Fog Lock Nut Co., Mundelein, Ill.

Division of Ser. No. 13,007, Feb. 20, 1970, Pat. No. 3,693,237.
This application Apr. 20, 1972, Ser. No. 245,710
Int. Cl. B23p *11/00*
U.S. Cl. 29—243.52 **4 Claims**



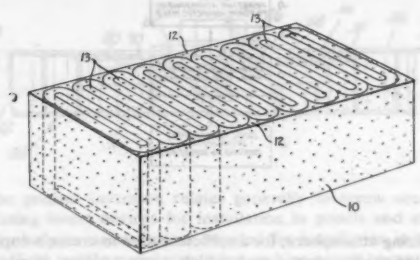
A die for effecting the mounting of a thick metal element to a thinner metal sheet is disclosed wherein by a single stroke of a ram the thick metal element acts as a punch and pierces its own hole in the sheet metal on which it is to be mounted. The thick metal element has one or more laterally extending flanges which abut upon one side of the said sheet, the corners of the element being displaced laterally in the die, preferably under a flange, to clinch the material therebetween. The sheet is also displaced at the displaced region of the element and in the same general direction as the displacd region of the element. The displaced material of the element and sheet is compressed together to form, in effect, a cold weld, but it is not confined laterally, thereby avoiding binding of the displaced material in the back-up die used to displace the material.

3,766,629

MANUFACTURE OF FOAM AIR FILTER ELEMENTS

Leo J. Lechtenberg, Elm Grove, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Nov. 17, 1971, Ser. No. 199,666
Int. Cl. B23p 17/00
U.S. Cl. 29—412 3 Claims



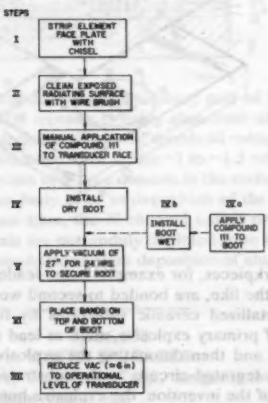
A sleeve-like primary air filter element is cut from a block of resilient foam material, such as polyurethane. In relaxed condition the sleeve has a narrow, elongated race track shape, with straight side stretches that are parallel and slightly spaced apart flatwise, and portions curved on small radius that connect the ends of the straight stretches. It is slipped axially around a cylindrical secondary filter medium of corrugated paper, its resilience permitting ready deformation to ring shape.

3,766,630

METHOD FOR REPAIRING OLD SONAR TRANSDUCERS

William V. Norfleet, 2313 Main St., Napa; Wilmer Charles Sibbach, 925 N. Camino Alta, Vallejo, and Donald R. Schueler, 3064 Linda Vista, Napa, all of Calif.

Filed Oct. 8, 1970, Ser. No. 79,151
Int. Cl. B22d 19/10; B23p 7/00
U.S. Cl. 29—401 5 Claims



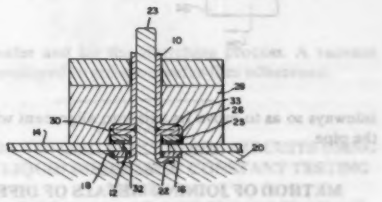
The method of using a stiff non-melting silicone lubricant; namely, Di-Methyl Polysiloxane oil and Silicone Oxide (SiO_2) compound to repair and seal sonar transducers. The method of repairing the old transducers comprises the steps of using a chisel shaped hot iron to remove the rubber facing of the transducer resonator, filling the cavity with a non-melting silicone lubricant, specifically Di-Methyl Polysiloxane oil and Silicone Oxide (SiO_2) compounds, then encasing the transducer with an exterior boot.

3,766,631

METHOD OF INTERCONNECTING A TUBE TO A PLATE

George E. Scheitlin, and Gene Richard Hanson, both of Columbus, Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Filed May 22, 1972, Ser. No. 255,695
Int. Cl. B23p 17/00
U.S. Cl. 29—424 6 Claims



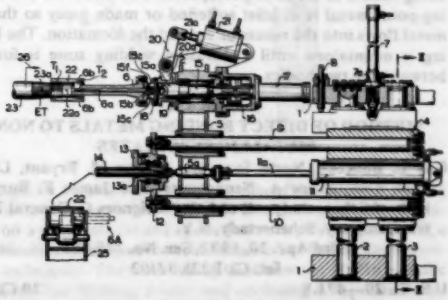
A method of forming a slidable interconnection between a tube and an opening in a plate. In accordance with one form of the disclosure said tube is inserted through an opening in said plate and a pair of annular projections are formed on said tube. Prior to forming said projections, a first washer is placed on the tube on one side of said plate and a second washer and a collar formed from an easily destructible material are placed on the tube on the opposite side of the plate with said collar carried against one face of said plate. Said projections are brought into binding engagement with said washers. After said projections are disposed in such binding engagement, the collar is removed to reduce the tightness of the fit between said washers and the plate.

3,766,632

METHOD AND APPARATUS FOR CONNECTING SLEEVES WITH TAPERED INTERNAL THREADS TO PIPES WITH TAPERED EXTERNAL THREADS

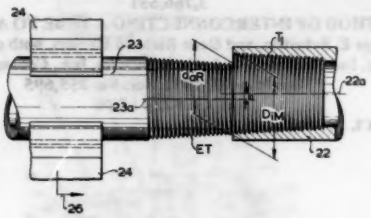
Alfons Goecke, Solingen, Germany, assignor to The Kieserling & Albrecht, Solingen, Germany

Filed May 11, 1972, Ser. No. 252,180
Claims priority, application Germany, May 18, 1971, P 21 24 629.7
Int. Cl. B23p 19/00, 19/04
U.S. Cl. 29—428 10 Claims



A sleeve having internal threads which taper in a direction away from its open end is screwed onto a pipe having external threads which taper toward one of the pipe ends by placing the sleeve and the pipe into such positions that the axis of the sleeve is parallel to but spaced from the axis of the pipe by half the difference between the maximum thread diameter of the sleeve and the minimum thread diameter of the pipe, by thereupon rotating the sleeve in a direction to screw it onto

the pipe, by moving the pipe axially toward the sleeve, and by simultaneously allowing or causing the sleeve to travel sideways so as to move its axis into alignment with the axis of the pipe.



3,766,633

METHOD OF JOINING METALS OF DIFFERENT MELTING POINTS

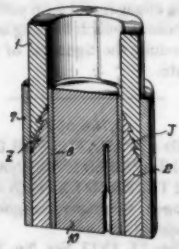
Werner Lehrheuer, Aachen, and Rudolf Lison, Kohlscheid, both of Germany, assignors to Kernforschungsanlage Julich, Julich, Germany

Filed Dec. 8, 1971, Ser. No. 206,004

Claims priority, application Germany, Dec. 10, 1970, P 20 60 728.7

Int. Cl. B23k *31/02*

U.S. Cl. 29—470.5 **3 Claims**



A system for joining metals of different melting points, in which the high-melting-point metal is provided with a form-fitting formation including a recess overhung by the formation and is pressed into the low-melting-point metal, both bodies being heated in vacuo at a temperature in which the low-melting-point metal is at least softened or made pasty so that its metal flows into the recess or around the formation. The heating is maintained until a diffusion welding zone is formed between the two bodies.

3,766,634

METHOD OF DIRECT BONDING METALS TO NON-METALLIC SUBSTRATES

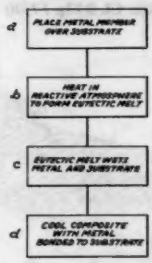
Guy L. Babcock, North Syracuse; Walter M. Bryant, Liverpool; Constantine A. Neugebauer, and James F. Burgess, both of Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 20, 1972, Ser. No. 245,889

Int. Cl. B23k *31/02*

U.S. Cl. 29—471.9 **20 Claims**

A method is described for direct bonding of metallic members to non-metallic members at elevated temperatures in a controlled reactive atmosphere without resorting to the use of electroless plating, vacuum deposition or intermediate metals. The method comprises placing a metal member such as copper, for example, in contact with a non-metallic substrate, such as alumina, heating the metal member and the substrate to a temperature slightly below the melting of the metal, e.g., between approximately 1,065°C. and 1,080°C. for copper, the heating being performed in a reactive atmosphere, such as an oxidizing atmosphere, for a sufficient time to create a copper-copper oxide eutectic melt which, upon cooling, bonds the copper to the substrate. Various metals, non-metals and reactive gases are described for direct bonding.



3,766,635

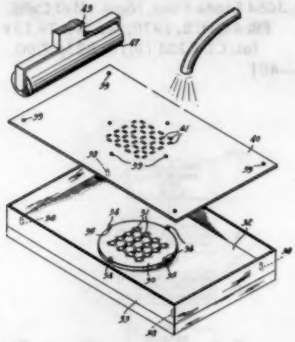
EXPLOSIVE BONDING OF WORKPIECES

Benjamin Howell Cranston, Trenton, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 68,431, Aug. 31, 1970, Pat. No. 3,727,296, which is a continuation-in-part of Ser. No. 6,829, Jan. 29, 1970, abandoned. This application Nov. 26, 1971, Ser. No. 202,535

Int. Cl. B23k *31/02*

U.S. Cl. 29—472.9 **12 Claims**



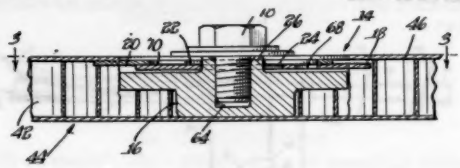
First workpieces, for example, beam-leaded integrated circuits, and the like, are bonded to second workpieces, for example, metallized ceramic substrates by first depositing a quantity of primary explosive, such as lead azide, onto each beam lead and then detonating the explosive to explosively bond the integrated circuits to the substrate. In another embodiment of the invention, the explosive bonding force is applied through a buffer sheet of plastic or metallic material which protects the surface of the substrate from contamination and which, in addition, dampens the shock of the explosion. In yet another embodiment of the invention, metal conductive paths are explosively bonded directly to a ceramic or glass substrate to form a "printed circuit pattern." The same techniques are used to manufacture resistors, capacitors, inductors, etc.

3,766,636

METHOD OF INSTALLING PANEL INSERT DEVICE

Henry A. Sygnator, Arlington Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 38,782, May 19, 1970, Pat. No. 3,662,805. This application Oct. 8, 1971, Ser. No. 188,691
Int. Cl. B23p *19/00*
U.S. Cl. 29—526 2 Claims



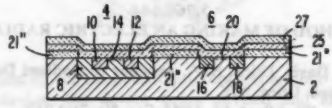
The present invention relates generally to screw accommodating insert devices for installation in panels and more particularly to insert devices adapted for installation in relatively light weight panel structures such as panels comprised of a honeycomb type core bounded by skin sheets. The embodiments of the invention disclosed herein include an adapter member to be accommodated by a complementary cavity formed in a panel, said adapter having a central screw accommodating aperture and hub section, the over all axial extent of the adapter being not substantially greater than the thickness of the panel with which it is to be used. The insert device also includes a pair of superimposed apertured plate members telescopically associated with the hub section and shiftable laterally thereof between concentric and eccentric relation with respect to the hub axis.

3,766,637

METHOD OF MAKING MOS TRANSISTORS

Peter Edward Norris, Princeton, and Joseph Michael Shaw, Cranbury, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed May 4, 1972, Ser. No. 250,354
Int. Cl. B01j *17/00*
U.S. Cl. 29—571 6 Claims



A method of making a complementary pair of N channel and P channel MOS transistors using aluminum oxide as the gate insulator material, in which the threshold voltage of the P channel unit is controlled to be in the −1 to −1.5 volt range by causing accumulation of N type dopants in the surface layer of the semiconductor body prior to deposition of the aluminum oxide. At the same time, the N channel unit is protected so that P type dopants are not unduly depleted from the surface layer of the semiconductor before deposition of aluminum oxide.

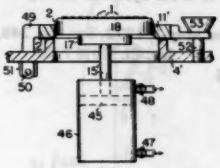
3,766,638

WAFER SPREADER

Arthur H. Moore, Campbell, Calif., assignor to Hugle Industries, Inc., Sunnyvale, Calif.

Division of Ser. No. 68,287, Aug. 31, 1970, Pat No. 3,714,704. This application Jan. 3, 1972, Ser. No. 215, 230
Jan. 3, 1972, Ser. No. 215,230
Int. Cl. B01j *17/00*
U.S. Cl. 29—583 4 Claims

A method for separating pieces (dies) of a semiconductor wafer in which the wafer is attached to a vinyl film, scribed, broken, and the film stretched in all radial dimensions. A plunger-type device having a rounded chamfer in contact with the film and a teflon or nylon surface is used to stretch the film radially by deforming it axially. The film is heated for attaching the wafer and for the stretching process. A vacuum step may be employed to enhance wafer-film adherence.



3,766,639

METHOD FOR TESTING ELECTRONIC CIRCUITS USING VARIABLE LIQUID DIELECTRIC CONSTANT TESTING MEDIA

Frank R. Parr, Baltimore, and Dale M. Weaver, Glen Burnie, both of Md., assignors to the United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 20, 1972, Ser. No. 219,578
Int. Cl. G01r *31/28, 29/00*
U.S. Cl. 29—593 3 Claims

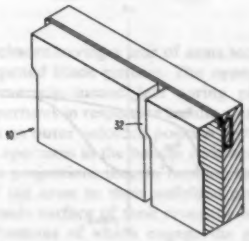
The combining of chlorothene with a dmethyl silicone fluid to provide a means and the method of testing frequency tuned electronic circuits, to be packaged in a solid resin, under simulated operating conditions.

3,766,640

METHOD OF MANUFACTURING MAGNETIC TRANSDUCERS

Frederick W. Hahn, Jr., Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,877
Int. Cl. G11b *5/42*; H01f *7/06*
U.S. Cl. 29—603 12 Claims



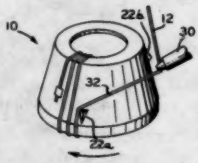
Magnetic transducing heads capable of reading and writing magnetic information in the form of a pattern of magnetization on a magnetic recording medium are provided utilizing a combination of magnetic sheet metal foil and thin film deposition techniques. The transducing heads consist of thin metallic magnetic foil forming a core and enclosing a deposited conductive exciting winding separated from the magnetic foil by deposited nonconductive material. The exciting winding is displaced from the transducing gap, the width of the gap being controlled by other deposited material.

The transducer is provided by depositing a layer of insulation upon a portion of a prepared metallic magnetic foil, depositing the required exciting winding, and then further insulating the conductive winding prior to completing the magnetic core with foil.

3,766,641
METHOD OF WINDING TOROIDAL YOKES

Franklin A. Metzler, and James M. Smith, both of Emporium, Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed May 1, 1972, Ser. No. 248,825
Int. Cl. H01f 7/06
U.S. Cl. 29—605 3 Claims

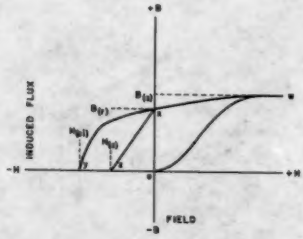


Projecting points on a yoke core are utilized to permit the winding of a number of separate and distinct coils as a single coil capable of subsequent separation into said separate coils. After the winding of a first coil the wire is snubbed against a first of such projecting points and the winding operation is stopped. The yoke core, however, is continuously rotated, dragging the wire across the yoke core until a second projecting point is reached, at which time the winding of a second coil is commenced.

3,766,642
PROCESS FOR PREPARING A DUCTILE METAL FERRITE

Charles M. Schlaudt, Berkeley; Ronald L. Clendenen, Orinda, and Eugene E. Olson, Oakland, all of Calif., assignors to Shell Oil Company, New York, N.Y.

Filed Sept. 27, 1971, Ser. No. 183,894
Int. Cl. B22f 3/24
U.S. Cl. 29—420.5 8 Claims



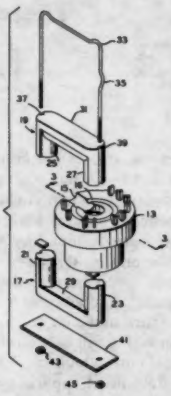
Oriented lead ferrites which yield superior ceramic permanent magnets are produced by the four-step process of

a. preparing small particles of agglomerated less than 0.1 micron grains of ferric oxide and lead oxide,
b. maintaining the particles of agglomerated oxides at temperatures of from about 700°C to 1,000°C for up to about 24 hours to cause the oxides to react (ferritize) and form less than 0.5 micron diameter crystallites of lead ferrite,
c. sintering the crystallites into a solid body either by maintaining them at from 750°C to 1,000°C for not more than 2 hours, or preferably by maintaining them at from 700°C to 1,000°C while applying pressure, and
d. hot forging the body by applying pressures of up to about 30,000 psi at temperatures of from 700°C to 1,050°C.

3,766,643
METHOD FOR FABRICATING A NON-INFLAMMABLE HORIZONTAL OUTPUT TRANSFORMER

William Lee Arrington; Wayne Carlton Gantt, both of Batavia, and Leonard Joseph Gouger, Albion, all of N.Y.

Division of Ser. No. 113,463, Feb. 8, 1971, Pat. No. 3,671,903.
This application Mar. 9, 1972, Ser. No. 233,047
Int. Cl. H01f 7/06
U.S. Cl. 29—605 3 Claims

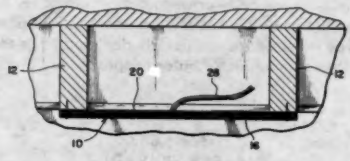


A method for fabricating a non-imflammable horizontal output transformer includes: winding a coil member on a hollow insular support; affixing an arcuate ring member to the coil member; surrounding the coil member, ring member, and leads and the coil member with an envelope of fire-proof material; and assembling said coil member onto a pair of U-shaped core members positionally held by a U-shaped wire member.

3,766,644
METHOD OF MAKING AN ELECTRIC RADIANT HEATING PANEL

Walter F. Davis, Utica, N.Y., assignor to Radiant Devices Incorporated, Utica, N.Y.

Filed Sept. 15, 1972, Ser. No. 289,267
Int. Cl. H05b 3/00
U.S. Cl. 29—611 4 Claims



An electric radiant heating device is self contained and is mounted on a surface of a room, such as on the studs or joists of a building and has an electrical resistance strip element of predetermined wattage spaced from the edges of and sandwiched between two thin pliable mylar sheets, with colored strengthening strips mounted along each edge of the panel, and a reflective surface mounted on the rear surface overlying the resistance strip.

3,766,645

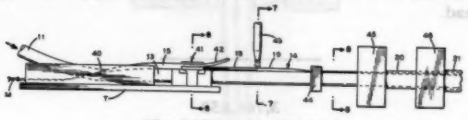
METHOD OF MAKING ELECTRICAL CABLES

Gerhard K. Ziemek, Hannover, Germany, assignor to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Division of Ser. No. 864,984, Oct. 9, 1969, Pat. No. 3,576,939. This application Oct. 6, 1970, Ser. No. 78,386

Int. Cl. H01b *13/26*

U.S. Cl. 29—624 3 Claims



A method of making electrical cables having an outer shielding element of thin metal tape; the tape being shaped into tubular form about the cable core and having a longitudinal seam; the seam having marginal tab portions integral with the tape and in face to face contact, the outer edges of the tab portions being metallically integrated to provide electrical conductivity continuously about the circumference thereof and to form a fluid impervious envelope for the core which is resistant to mechanical stresses.

3,766,646

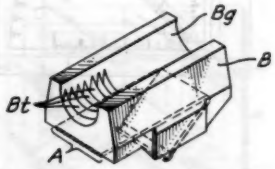
POTENTIOMETER CONTACT METHOD

Ronald L. Froebe, and Howard H. Hatch, both of Riverside, Calif., assignors to Bourns, Inc., Riverside, Calif.

Division of Ser. No. 118,246, Feb. 24, 1971, Pat. No. 3,704,636. This application Aug. 10, 1972, Ser. No. 279,584

Int. Cl. H01r *9/00*

U.S. Cl. 29—630 E 4 Claims



A contact device for potentiometers and method of producing the device, the device being devised and arranged to facilitate automatic manufacture thereof by a machine into which a strip-like sheet or array of fine-gauge wires is drawn in side-by-side relation under tension past stations at a first of which flat plates are bonded to the wires at locations at measured intervals apart to integrate the wires and plates into a unitary assembly and at a second of which stations an insulative body is molded around each of the plates in succession, and at a third of which stations the wires are severed adjacent one end of the body and are formed into a set or array of side-by-side cantilever contact fingers each offering lateral support to another thereof and each having a contact point disposed in a common straight line extending transversely of the fingers.

3,766,647

CAN OPENER WITH MAGNETIC CUTTING CHIP CATCHER

Walter Steiner, Oberseenerstrasse 14, Winterthur, Switzerland

Filed Feb. 7, 1972, Ser. No. 223,889

Claims priority, application Switzerland, Feb. 10, 1971, 1960/71

Int. Cl. B26b *7/34*

U.S. Cl. 30—9 8 Claims

The can opener support has a cutter element, such as a rotary cutter mounted thereon, adjacent a transport wheel to provide for relative movement of the cutter, and a can pinched between the cutter and the transport wheel. To catch cutting chips and prevent their falling into the can being opened, a magnet, preferably a bar magnet is located adjacent the cutter wheel but spaced therefrom by a small air gap, the bar magnet being for example 3–5 mm in diameter and having a length about three to five times the diameter, extending at about a right angle from the support to about the distance of the cutter wheel from the support, and being located so that its lower edge is about at the level of the portion of the cutter element which extends over the edge of the can being opened.

3,766,648

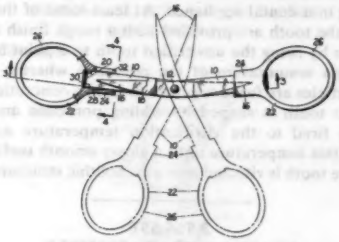
FOLDING SCISSORS

Louis W. Chundelak, Jr., 13725 N.E. Fremont Ct., Portland, Oreg.

Filed June 26, 1972, Ser. No. 266,138

Int. Cl. B26b *13/00*

U.S. Cl. 30—255 4 Claims



A folding scissors having a pair of arms terminating at one end in a sharpened blade portion. The opposite ends of the arms have reversely turned leaf spring portions slidably mounted in apertures in respective handle members for movement between an outer unfolded position and an inner folded position. The apertures in the handle members which receive the arms have projections therein forming stops for outward movement of the arms to their unfolded positions, and the arms at the inside surface of their reversely turned ends have grooves the bottoms of which engage the projections. The grooves allow the arms to move as far as possible to their outer position so that the reversely turned ends of the arms project a minimum distance into finger loops of the handle members. Such grooves also improve operation of the reversely turned portions in the handle apertures and in addition provide a more stable and long lasting structure.

3,766,649

EDGE SHARPENING TOOL

Alois P. Winbauer, Schenectady, N.Y., assignor to Mohawk Precision Corporation, Schenectady, N.Y.

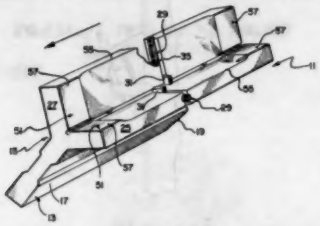
Filed Nov. 8, 1971, Ser. No. 196,517

Int. Cl. B26b *27/00*; B27g *17/02*

U.S. Cl. 30—287 6 Claims

An edge sharpening tool, particularly adapted for, but not limited to sharpening the snowside edges of snow skis. The

tool comprises a handle portion and a bifurcated work portion including a pair of legs intersecting at the handle portion. A



pair of blades are disposed within the work portion, one in each leg, and each blade is canted back in a direction opposite that in which the tool is normally used. The blades are arranged so that sharpening is simultaneously executed in two planes. Further the tool is so constructed so as to provide guidance and stability during the sharpening operation.

3,766,650

SEMI-FINISHED PORCELAIN TEETH

Rafael Gnecco, 3820 Waldo Ave., Riverdale, N.Y.

Continuation-in-part of Ser. No. 19,522, March 17, 1970, Pat. No. 3,621,576, which is a continuation-in-part of Ser. No. 674,027, Aug. 10, 1967, abandoned. This application Oct. 12, 1971, Ser. No. 188,561

Int. Cl. A61c *13/00*

U.S. Cl. 32—8 **4 Claims**

A semi-finished artificial tooth adapted for shaping and mounting in a dental appliance. At least some of the surface areas on the tooth are provided with a rough finish either by etching or by firing the unvitrified tooth to a point below the vitrification temperature of the porcelain wherein the porcelain particles are fused together to form a concretious body. When the tooth is shaped by adding porcelain and is subsequently fired to the vitrification temperature and maintained at this temperature until a glossy smooth surface is obtained, the tooth is vitrified into a monolithic structure.

3,766,651

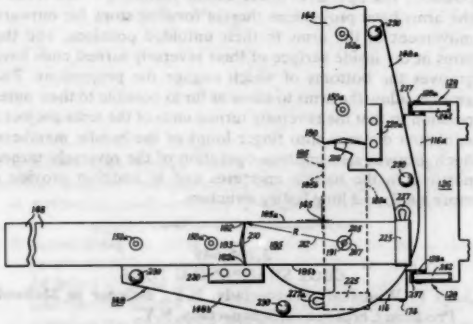
DRAFTING HEAD ASSEMBLY

Edward P. Bullard, III, 1381 Burr St., Fairfield, Conn.

Continuation-in-part of Ser. No. 114,833, Feb. 12, 1971, abandoned. This application Apr. 17, 1972, Ser. No. 244,675

Int. Cl. B43l *13/08*

U.S. Cl. 33—76 R **6 Claims**



A drafting head for a drafting machine has two scaled straightedges directable at right angles to one another to define *x* and *y* coordinates, and carried by a member provided with an annular path of rotation. The member is constrained to the annular path for accurate angular adjustment of the straightedges, and the center line of this path passes through the vertex of the operating positions of the two straightedges. Each of the two straightedges in its operative position leaves clear drafting space in the vicinity of the operative station of the other straightedge, but means are provided to permit the drawing of lines to and through the above-mentioned vertex along the operating position line of each straightedge, and also to permit the drawing of lines radiating into each of four quadrants from a common center without moving the drafting head.

3,766,652

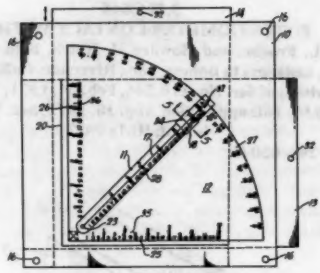
TRIGONOMETRIC AID

Arthur L. Gomez, Rowland Heights, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Apr. 5, 1972, Ser. No. 241,220

Int. Cl. B43l *7/06*; **G01b** *5/00*

U.S. Cl. 33—97 **3 Claims**



A nomographic device for determining the solution of problems involving the length of the sides and hypotenuse of right triangles and the size of angles between said sides and the hypotenuse, consisting of a transparent chart board, the axes of which are scaled, with a pivoted arm rotatable about an angle scale. The angle scale is marked in degrees of the angle of said arm with relation to the rectilinear coordinates of the chart board. Two independent transparent slide indicators are mounted below the chart board one of which slides in the horizontal direction and is marked with an opaque vertical indicating line, the other of which slides in the vertical direction and is marked with an opaque horizontal line. The vertical and horizontal axes of the chart board, and the length of the pivoted arm, are marked in units of various multiples.

3,766,653

THREE AXIS INSPECTION PROBE

Russell M. McKay, Sr., Los Altos, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

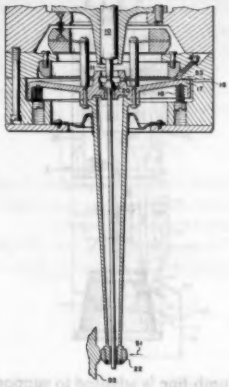
Filed Oct. 4, 1971, Ser. No. 186,231

Int. Cl. G01b *3/22, 7/28*

U.S. Cl. 33—174 L **7 Claims**

A probe of the type used with automatic numerical control inspection systems for checking sizing of machined articles is disclosed. This probe measures dimensions along either of three axis to effect electrical signal indicative of any deviation

from the nominal dimension. This probe has a spindle which rides against the plunger of an electric transducer. Movements



in the Z direction are measured by retracting the shaft of the transducer by a movement of the spindle. Movement in the X and Y direction is measured by allowing the total stylus assembly to pivot, thus allowing the shaft of the transducer to extract.

3,766,654

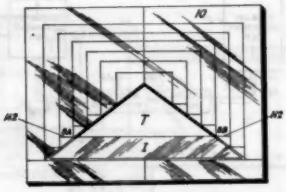
STARGUIDE DRAWING INSTRUMENT

Steve Canton, 5505 Flag Run Dr., North Springfield, Va.

Filed Dec. 7, 1970, Ser. No. 95,839

Int. Cl. B43l *13/00*

U.S. Cl. 33—174 B **5 Claims**



Disclosed is a drawing instrument for laying-out geometric figures such as five pointed stars, pentagons, circles or combinations of any of these figures. The drawing instrument comprises a plate having a triangular aperture therein. A plurality of vertical and horizontal guidelines are scored on the plate, some of the horizontal guidelines intersecting the sides of the triangular aperture. Pinholes are made in the plate at selected points above the apex of the triangular aperture. A pushpin is useful with the pinholes in the plate to permit the drawing of stars, pentagons and circles. The points of intersection of the horizontal guidelines with the sides of the aperture are useful as markers in drawing different sized figures. Also, inserts may be placed within the triangular aperture to aid in the drawing of different sized figures. A plurality of circle guides are made in the plate at selected distances from the pinholes to permit the drawing of various sized circles.

3,766,655

INTERNAL-MEASURING INSTRUMENT FOR BORES AND THE LIKE HAVING SELF-CENTERING MEANS IN ADDITION TO THE MOVABLE PROBE

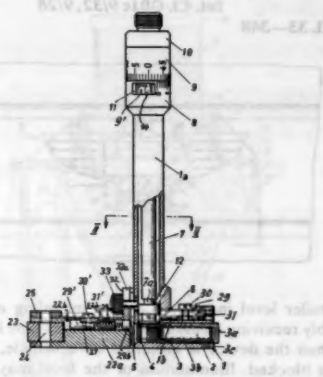
Antonio Cho, Feldblumenweg 47, 8048 Zurich, Switzerland

Filed Feb. 24, 1971, Ser. No. 118,358

Int. Cl. G01b *5/12*

U.S. Cl. 33—178 R **2 Claims**

An internal-measuring instrument for measuring the internal diameter of bores and the like in which an upright spindle rotates a threaded member to drive a movable probe against the wall of a bore while bringing a fixed body into abutment with the diametrically opposite portion of the wall. Replaceable spring-loaded arms on the stationary body form outriggers



therefore to center the device automatically by a three-part system. The displacement of the movable probe is registered on the barrel of the instrument to indicate the measured dimensions.

3,766,656

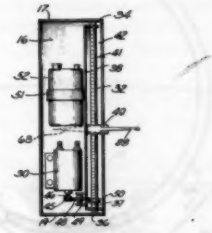
MOTOR DRIVEN BOW SIGHTING DEVICE

Kenneth M. Westphal, 836 N. 28 St., Milwaukee, Wis.

Filed Nov. 22, 1971, Ser. No. 201,046

Int. Cl. F41b *5/00*

U.S. Cl. 33—265 **5 Claims**

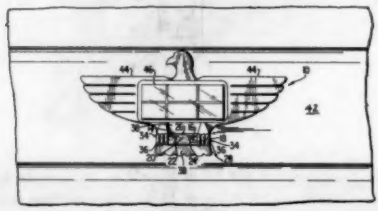


A sighting device for an archer's bow includes a single sight pointer which is adjustably movable vertically in registry with the sight window on the bow. The sight pointer is mounted on and extends laterally from a nut which is threadably received on a screw rotatably supported on a bracket which is attachable to the bow. The nut is confined by channel flanges which afford rectilinear movement of the nut but restrain rotation of the nut. A small electric reversible motor is connected to the screw by a gear drive train for raising and lowering the sight pointer. The motor and a battery for energizing the motor are supported on the bracket. The electrical switch for energizing the motor for raising or lowering the sight indicator is optionally located on the bracket or in a convenient access location on the bow hand grip. An indicator projects laterally and oppositely of the pointer for registration with distance indicia on a scale also carried by the bracket. The bow sight also includes a rear sight which is connected to the bracket and positioned rearwardly of the bow hand grip and alignable with the forward sight pointer and the target to facilitate aiming of the arrow. The sighting device also includes an electrical circuit with a signal light to indicate a pre-selected full arrow draw and in which the signal light is illuminated when a conductor on the arrow closes two electrical contacts on the arrow rest.

3,766,657
TRAILER LEVEL INDICATING DEVICE

Evan L. Hopkins, Emporia, Kans., assignor to Hopkins Manufacturing Corp., Emporia, Kans.

Filed Oct. 16, 1970, Ser. No. 81,360
Int. Cl. G01c 9/32, 9/28
U.S. Cl. 33—348 2 Claims

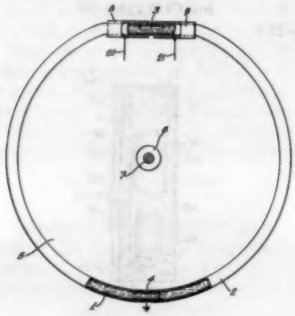


A trailer level indicating device including a carrier body rotatably receiving a curved bubbled level tube in interference fit. When the device is mounted on a vehicle, access to the tube is blocked. Illumination of the level may be enhanced through the provision of reflectors, particularly those responsive to non-directional light.

3,766,658
ELEVATION ANGLE INDICATOR

Elbert N. Shawhan, West Chester, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed June 4, 1971, Ser. No. 149,896
Int. Cl. G01c 9/06, 9/26
U.S. Cl. 33—366 3 Claims



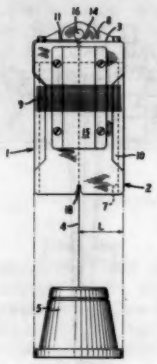
A body of liquid contained in a ring-shaped piece of tubing serves as a liquid pendulum. Changes in the elevation angle of the support on which the tubing is mounted cause the tubing to rotate relative to the liquid; this relative rotation is sensed by means of a pair of capacitor electrodes coupled to the liquid, variations in capacitance causing energization of a driving motor in a direction to rotate the tubing back to a null position. The amount of rotation of the support, and hence the elevation angle, is indicated on a digital voltmeter supplied from a potentiometer mechanically coupled to the shaft which rotates the tubing.

3,766,659
SUPPORT DEVICE FOR PLUMB-LINE

Andre Quenot, Besancon, France, assignor to Manufacture Quenot Mabo S.a.r.L., Besancon, France

Filed Dec. 3, 1970, Ser. No. 94,929
Claims priority, application France, Dec. 4, 1969, 6941884
Int. Cl. G01c 15/10
U.S. Cl. 33—392 5 Claims

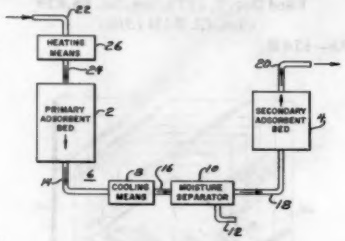
A device for checking the verticality of a surface includes a plumb-bob attached to one end of a plumb-line, the opposite end of the plumb-line being attached to a case. The case has a through bore for the passage of the plumb-line and an external surface of the plumb-line is adapted to support the plumb-line wound on said external surface when the device is not in use.



3,766,660
ADSORPTION GAS DRYING METHOD AND APPARATUS

Bernard W. Settlemyer, Coraopolis, Pa., assignor to Ajax Magnethermic Corporation, Warren, Ohio

Filed Aug. 16, 1972, Ser. No. 281,032
Int. Cl. F26b 3/00, 5/16
U.S. Cl. 34—9 9 Claims



A continuous gas drying method and apparatus is disclosed in which only a single primary adsorbent bed is used and in which secondary, smaller adsorbent bed is used to adsorb moisture from gas while the primary bed is being reactivated. While the primary bed is adsorbing moisture, the dry gas from the primary bed is utilized to reactivate the secondary bed. The gas flow is continuously through the primary adsorbent bed in a single direction only with the flow of dry air produced being reduced or the moisture level being somewhat higher during the reactivating period of the secondary adsorbent bed.

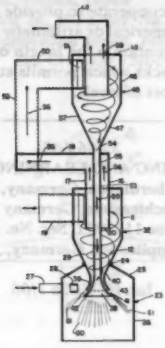
3,766,661
APPARATUS AND METHOD FOR CONCENTRATING A TWO-PHASE GAS-SOLID MIXTURE FOR INJECTION INTO A REACTOR

Charles A. Bayens, Houston, Tex., and Ivan S. Bjorklund, San Francisco, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Apr. 2, 1971, Ser. No. 130,699
Int. Cl. F26b 3/08, 3/10; B01j 9/14
U.S. Cl. 34—10 2 Claims

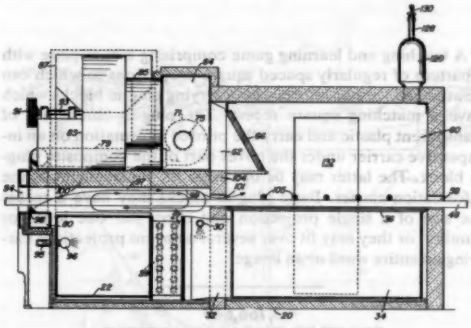
Apparatus and method for concentrating a two-phase gas-solids mixture within a cyclone separator and utilizing the energy of the cyclone's concentrated solids stream for the purpose of injecting and dispersing said solid particles into a reactor. The mixture is introduced into the separator with a tangential vortexing motion permitting the mixture to flow

downwardly in a spiral. The gas phase of the mixture is separated and removed from the separator through the gas exit at the top, while the solids phase of the mixture is



removed through the solids exit at the bottom in the form of a hollow, swirling cone of solids which is then passed directly into a reactor while a gas adapted to react with the solids is injected therein into communication with the cone of solids.

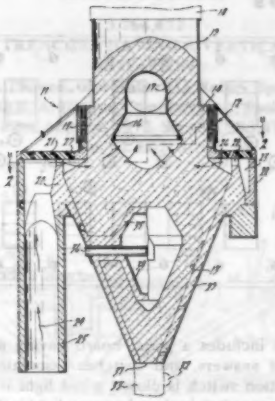
3,766,662
APPARATUS FOR DRYING FABRICS
Richard E. Moyer, 2815 Baird Rd., Fairport, N.Y.
Filed Jan. 24, 1972, Ser. No. 219,972
Int. Cl. F26b *13/00*
U.S. Cl. 34—158 **6 Claims**



Fabrics to be dried and set are passed through a super steam atmosphere in a distribution chamber. The steam is driven through the fabric by fans, is returned to a collecting chamber, passed between heating coils to bring it back to the desired temperature and then returned to the distribution or drying chamber in an enclosed circulatory system. Supplementary fans draw off some of the steam from the distribution chamber and direct it into a preheating chamber through which the fabric passes on its way to the main drying chamber. Because the fabric itself yields up moisture, condensers are connected to the distribution chamber to remove excess moisture from the apparatus. Additional steam may be supplied to the collecting chamber from an outside source.

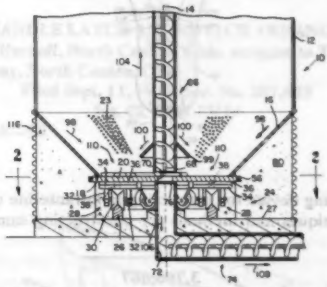
3,766,663
PREHEATER FOR LIME KILN
Marshall F. Parsons, Washington, D.C., assignor to Detroit Lime Company, Detroit, Mich.
Filed Mar. 7, 1972, Ser. No. 232,579
Int. Cl. F26b *17/12*
U.S. Cl. 34—168 **13 Claims**

A preheater for particulate material comprising a cylindrical refractory lined vessel with top feed and exhaust offtake. The preheater diameter is enlarged below the offtake so that the sloping material forms an area surrounded by ports which receive hot gases from the kiln. The lower portion of the pre-



heater is conical, leading toward a small central discharge point. This portion constitutes a soaking zone in which heat is allowed to penetrate the material.

3,766,664
GRAIN CIRCULATING SYSTEM
Kermit H. Burgin, R.R. #1, Whitestown, Ind.
Filed Aug. 8, 1972, Ser. No. 278,753
Int. Cl. F26b *11/08*
U.S. Cl. 34—182 **14 Claims**



A particulate material storing and moving apparatus comprising an upstanding bin defining a center vertical axis, a concentric circular floor for the bin, the floor having an outer peripheral portion and a center portion, the floor being supported for movement about the center axis, and a driver for moving the floor about the axis. Conveyors are provided for moving such material from the center portion either upwardly to the top of the bin or downwardly and outwardly to the outside of the bin, the conveyors having entry ends disposed adjacent the center portion and discharge ends. Particulate material movers are carried on the floor to be movable therewith, the movers being proportioned and designed to move the material radially inwardly toward the center portion as the floor rotates. The movers on the floor sweep underneath the material and move it radially inwardly.

3,766,665

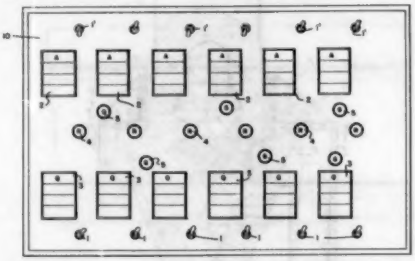
ILLUMINABLE QUESTION AND ANSWER BOARD

James Arthur Clark, 2423 Virginia Beach Blvd., Norfolk, Va.

Filed June 30, 1971, Ser. No. 121,645

Int. Cl. G09b 7/02

U.S. Cl. 35—9 B 6 Claims



The device includes a panel board having a plurality of questions and answers, and switches associated therewith. When a question switch is closed a red light is illuminated. When an answer switch is closed a green light is illuminated. If the answer switch represents the correct answer the red light will be extinguished. If it represents an incorrect answer the red light will remain illuminated.

3,766,666

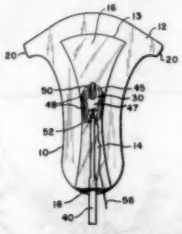
UTERINE SIMULATOR TRAINER

John Harry Stroop, Brooklyn, N.Y., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Filed Oct. 13, 1971, Ser. No. 188,960

Int. Cl. G09b 23/30

U.S. Cl. 35—17 2 Claims



A training device for instructing in intrauterine contraceptive techniques and methods for constructing same are disclosed.

3,766,667

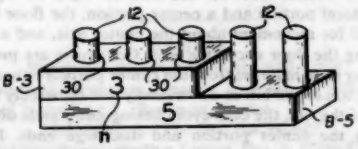
EDUCATIONAL ARITHMETIC MANIPULATIVE TOY

Stanley H. Glassman, 41 Harvest Ln., Commack, N.Y.

Filed Jan. 11, 1971, Ser. No. 105,363

Int. Cl. G09b 19/02; A63h 33/12

U.S. Cl. 35—31 G 4 Claims



An educational toy useful as an aid in teaching arithmetic concepts comprises a set of number blocks with separate pegs adapted to extend through apertures in the blocks for stacking the blocks in multiple levels. Each of the blocks is formed of a length and with a number of apertures determined by a designated numerical value for the block. When stacked in appropriate levels with the pegs extending through the apertures, the blocks and pegs cooperate to provide a physical and visual representation of numerical or arithmetic concepts. A particular feature of the invention is the length of the pegs relative to the height of the blocks which permits stacking of the blocks to an optimum number of levels.

3,766,668

TEACHING AND LEARNING GAME

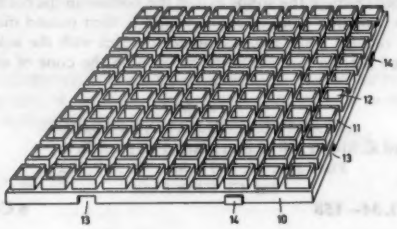
Georg Vogel, Schwieberdingen, Germany, assignor to Eurocom Establishment, Liechtenstein, Germany

Filed June 11, 1971, Ser. No. 152,350

Claims priority, application Germany, June 11, 1970, P 20 28 701.8

Int. Cl. G09b 1/06

U.S. Cl. 35—35 H 7 Claims



A teaching and learning game comprising a base plate with a pattern of regularly spaced square projections to which can be attached various information-carrying plug-in blocks which have a matching square recess. The plug-in blocks are of transparent plastic and carry the printed information on an inexpensive carrier under the cover part of the composite plug-in block. The latter may be openable for replacement of the information-carrier. Basic plug-in blocks may have a recess the size of a single projection and carry just one letter or number, or they may fit over several adjacent projections carrying an entire word or an image.

3,766,669

PROFILED CELLULAR ARTICLE

Ralph E. Pearsall, Gloucester, Mass., assignor to USM Corporation, Boston, Mass.

Division of Ser. No. 851,796, Aug. 21, 1969, Pat. No. 3,591,882. This application Jan. 4, 1971, Ser. No. 103,789

Int. Cl. A43b 13/38

U.S. Cl. 36—43 2 Claims

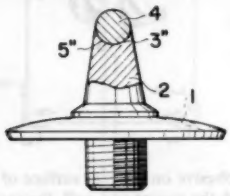
A flexible polyvinyl chloride foam member is provided with a permanent profile or shape by use of compressive pressure and radio frequency heating. The resulting article has a higher concentration of smaller foam cells in a portion of higher density than in a portion of lower density.

3,766,670

SPIKE FOR SHOES AND A METHOD FOR MANUFACTURING THEREOF

Yoshinori Nakajima, Itami, Japan, assignor to Sumitamo Electric Industries, Ltd., Osaka, Japan

Filed July 26, 1972, Ser. No. 275,404
Claims priority, application Japan, July 26, 1971, 46/65568
Int. Cl. A43c *15/00*
U.S. Cl. 36—67 B 6 Claims



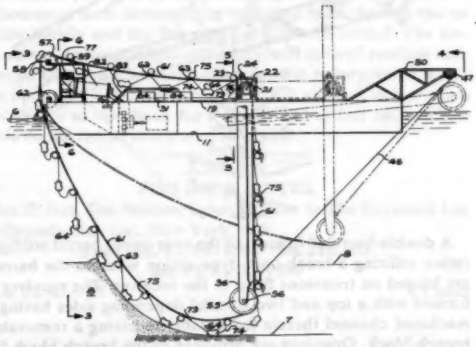
A spike for shoes comprising a steel shank having a flange and super hard tip, the latter being jointed to the former fixedly through a concave-convex engagement by means of electro-resistant welding.

3,766,671

METHOD AND APPARATUS FOR EXCAVATING WITH AN ENDLESS BUCKET LINE

Ronald M. Guntert, 2402 Clarendon St., Stockton, Calif.

Filed Dec. 20, 1971, Ser. No. 209,584
Int. Cl. E02f *3/14*
U.S. Cl. 37—69 22 Claims



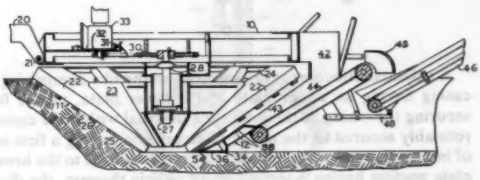
For underwater excavating I employ a hull having a well. The hull supports a pair of catenary terminals relatively movable toward and away from each other. The terminals may be in the form of rotary drums. Both drums are mounted on the hull for yielding movement such as pivoting about a fore and aft horizontal axis. A continuous flexible line is supported from the hull by being trained around the drums and extends in a catenary curve below the hull to a variable depth controlled by varying the length of the line along the catenary. The line is advanced in a predetermined direction by a driver operating one or more of the drums. Supplemental suspension lines fasten excavating buckets to the continuous line for limited movement. The buckets discharge into material handling equipment on the hull. Preferably, the line shape or catenary curve below the hull is variable by another catenary terminal in the form of another rotary drum, idle or driven, suspended from the hull and movable fore and aft thereon, usually in company with one of the hull mounted drums. The other or additional rotary drum also can swing laterally and fore and aft and can be raised and lowered; i.e., projected and retracted, affording universal yielding movement. If desired the line can be doubled to include two lines in spaced parallel planes and of similar curvature, the buckets being flexibly fastened to both lines, if desired. Also, the line or lines can carry floats.

3,766,672

ROTARY TRENCHER HAVING A VERTICAL AXIS OF ROTATION

Raymond A. Hanson, and Robert L. Roller, Spokane, Wash., assignors to R. A. Hanson Company, Inc., Spokane, Wash.

Filed Aug. 24, 1972, Ser. No. 283,478
Int. Cl. E02f *3/18*
U.S. Cl. 37—91 5 Claims



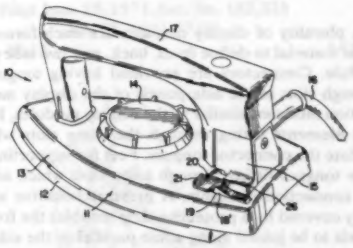
A trimming apparatus for open longitudinal trenches of the type used in irrigation canal and distribution systems. The trimmer utilizes a vertical cutter assembly having a plurality of identical equiangularly oriented radial blades which move in a path defining an inverted truncated cone. Immediately rearward of the cutter assembly is a moldboard assembly having cutter edges for engaging the loosened soil and longitudinal shoes for smoothing the resulting trench surfaces. The moldboard assembly vertically supports the apparatus to permit accurate grade control. Material is removed through an aperture in the center of the moldboard assembly and is conveyed to the side of the trench by elevating conveyors.

3,766,673

IRON HANDLE LATCH AND SWITCH ARRANGEMENT

Jerry M. Harroff, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio

Filed Sept. 11, 1972, Ser. No. 287,655
Int. Cl. D06f *75/34*
U.S. Cl. 38—90 3 Claims



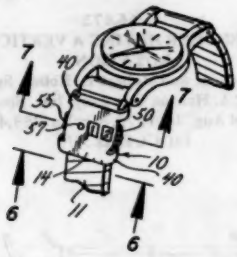
In the preferred form, a dual voltage collapsible handle travel iron wherein the iron is provided with a latch for releasing the handle so that the handle may be folded to a storage position, the iron also being provided with a dual voltage switch, the switch when in its low voltage position blocks movement of the handle latch from a latched position to an unlatched position.

3,766,674

CALENDAR ATTACHMENT

Fridolin E. Bersche, 407 Bellefontaine Dr., Waterloo, Ill.

Filed Jan. 26, 1972, Ser. No. 220,778
Int. Cl. G09d 3/08
U.S. Cl. 40—113 6 Claims



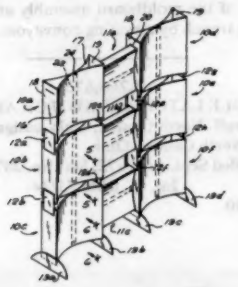
A calendar attachment for jewelry and the like comprising a casing having an upper plate and a lower plate, means for securing the casing to the jewelry, a first dial within the casing rotatably secured to the upper plate portion having a first set of indicia thereon, a second dial rotatably secured to the lower plate portion having a second set of indicia thereon, the dials being partially overlapping and offset in opposite directions with their rims partially protruding beyond opposite sides of the casing, and means for selecting indicia by rotation of the dials.

3,766,675

MODULAR ADVERTISING DISPLAY

Jonathan W. Leigh, New York, N.Y., assignor to Jonathan Leigh Inc., New York, N.Y.

Filed Aug. 30, 1972, Ser. No. 284,820
Int. Cl. G09f 19/00
U.S. Cl. 40—126 A 8 Claims



A plurality of display modules are each formed of folded sheet material to define front, back, and two side panels of the module. Connectors are provided having tongues which fit through slots in the side panels of the display modules. Connection modules, similar to the display modules, have connection elements fitting through the same slots which accommodate the connector tongues. Feet for supporting the display have tongues fitting through same slots which accommodate the connection elements. A pressure sensitive adhesive, initially covered by a protective strip, enables the front and back panels to be joined along a line parallel to the side panels giving the front and back panels a concave shape. Guide holes are provided in the front and back panels.

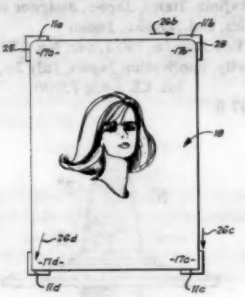
3,766,676

POSTER MOUNTS

John W. Slemmons, 19142 Glen Albyn, Orange, Calif.

Filed May 3, 1971, Ser. No. 139,688
Int. Cl. G09f 1/10
U.S. Cl. 40—158 A 6 Claims

Four poster mounts are die cut from a cardboard panel. Each mount has on the front surface, adjacent a first corner, an adhesive for attachment to a respective corner of a poster. A tension pad of resilient material is provided on the reverse surface of each mount in the corner diagonally opposite the first corner. Adhesive on the rear surface of each tension pad is used to attach the mount to a wall, the resiliency of the pad maintaining the poster under tension.

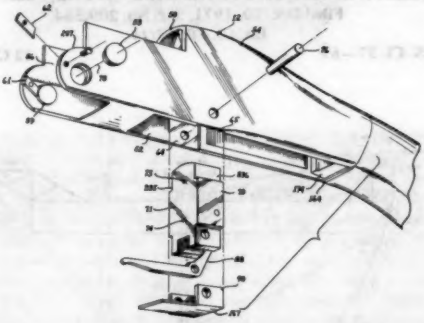


3,766,677

PIVOTAL BARREL AND RECEIVER ASSEMBLY HAVING A REMOVABLY MOUNTED BREECH BLOCK

Richard G. Waddell, Phoenix, Ariz., assignor to The Innovation Resources Corporation, Phoenix, Ariz.

Filed Sept. 7, 1971, Ser. No. 178,268
Int. Cl. F41c 7/00, 11/00, 11/08
U.S. Cl. 42—75 D 8 Claims



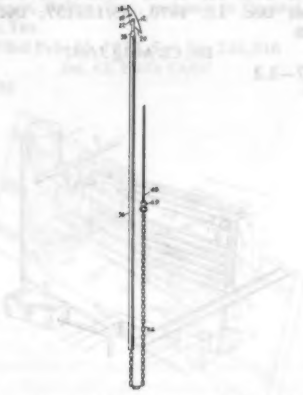
A double-barreled firearm of the over-under barrel configuration utilizing a break-open type action wherein the barrels are hinged on trunnions fixed to the receiver. The receiver is formed with a top and two parallel depending sides having a machined channel therein for slidably receiving a removable breech block. Openings are provided in the breech block for passage of barrel locks extending past the breech face and engaging detents in the breech end of the barrel housing. A removable trigger group is releasably secured to the bottom of the receiver and includes a trigger, a sear actuator, a pair of sears, and a pair of hammers; a selector/safe carriage is also provided within the trigger group and is slidably positionable to select either of the sears for actuation while automatically locking the non-selected sear. The selector/safe carriage may also be positioned to lock the trigger to prevent firing of either barrel. The positioning of the selector/safe carriage is achieved through the utilization of a pivoted cam actuated by a manual safe/selector switch located on top of the receiver. A release lever is also positioned on the top of the receiver for withdrawing the barrel locks from the detents in the barrel housing; an extension having a camming surface is secured to the barrel locks for engaging the cam following surface on the selector/safe mechanism to automatically position the latter in the same position at any time the barrel locks are disengaged from the barrel housing. The distance from the trunnions to the machined channels in the receiver is accurately controlled to thus permit interchangeability of different size barrels with a given receiver.

3,766,678

HARPOON-FLYING GAFF

Harry D. Reaves, 929 N. Patrick Henry Dr., Arlington, Va.

Filed Oct. 4, 1971, Ser. No. 185,948
Int. Cl. A01k 81/04
U.S. Cl. 43—6 6 Claims



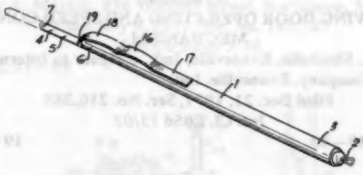
A pointed instrument, in the nature of a harpoon or gaff, is provided with a shank slidably fitted into one end of a tubular handle and detachably connected to a flexible element extending from the other end of the handle and adapted to have its extremity anchored whereby, when a sea creature is harpooned or gaffed and attempts to run, the flexible element can slide outwardly through the tubular handle to the limit of movement provided by the anchoring of the flexible element, whereupon such element may be pulled back through the tubular handle and the fish or other creature landed. The harpoon has a pivoted blade releasably held in fixed position relative to the shank, whereby when the fish is harpooned, a pull on one point of the harpoon blade will swing it to a position transverse to the shank for a firmer and in fact unbreakable hold on the fish so that it may be landed.

3,766,679

FISH HOOK SETTER

Max E. Noe, Des Moines, Iowa, assignor to The Raymond Lee Organization Inc., New York, N.Y.

Filed Dec. 21, 1971, Ser. No. 210,503
Int. Cl. A01k 97/00
U.S. Cl. 43—15 1 Claim



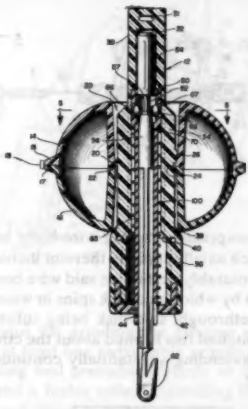
A fish hook setter comprising a tubular housing having means at one end for fixing the housing to a fishing pole, an elongated flat tongue slidably positioned in the housing with a portion of the tongue extending outside the housing, and spring means disposed in the housing for applying specific tensions to a fishing line attached to the outer end of the tongue. The spring means is attached at one end to the inner end of the tongue and at the other end to the housing. Tension maintaining means for holding the tongue at different lengths outside of the housing comprises a plurality of spaced holes in the tongue and a leaf spring affixed at one end to the outside of the housing with the other end extending beyond the end of the housing and having a bent part to engage a selected hole in the tongue. When a fish bits, the bent part of the leaf spring is disengaged from the hole in the tongue and the spring means retracts the tongue into the housing to set the hook on the line in the fish's mouth.

3,766,680

COMBINED BOBBER AND HOOK SETTING MECHANISM

Albert Torme, Chicago, and Jerome Theodore Wolfson, Glencoe, both of Ill., assignors to Business Builders International, Inc., Chicago, Ill.

Filed Sept. 20, 1972, Ser. No. 290,458
Int. Cl. A01k 97/12
U.S. Cl. 43—16 1 Claim



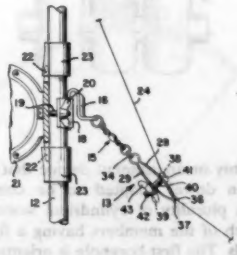
There is disclosed an improved combination fishing bobber and hook setting mechanism of the type having a spring loaded shaft mounted within a sleeve, the shaft having an eye hook at its lower end for supporting a fishing line and the upper portion of the shaft including the shaft's setting means for setting the shaft in the lower fishing position, the sleeve supporting a bobber float thereabout in removably engageable relation, wherein the shaft includes an extension portion extending upwardly from the top end of the sleeve, and the extension portion includes signal means for indicating actuation of the spring loaded shaft within the sleeve.

3,766,681

TENSION RELEASE FOR FISHING EQUIPMENT

Harold C. Mander, 1375 East 53rd St., Brooklyn, N.Y.

Filed June 15, 1971, Ser. No. 153,321
Int. Cl. A01k 97/00
U.S. Cl. 43—43.12 1 Claim



A tension release device for use with fishing equipment includes a pair of resilient inwardly biased arms connected to one another at one end and abutting one another at the opposite end. The arms are outwardly bowed at their intermediate portions. A threaded member having a head at one

end and a nut at the other end passes through the arms and can increase or decrease the tension at the abutting ends of the arms. A fishing line is normally disposed within the arms but can pass through their abutting portions if a predetermined force is exceeded.

3,766,682

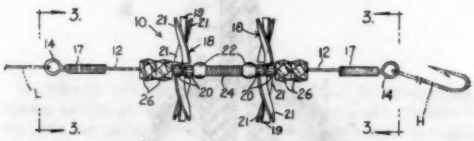
FISHING LURE

Louis Majdak, 29919 Greater Mack, St. Clair Shores, Mich.

Filed May 19, 1972, Ser. No. 254,948

Int. Cl. A01k *85/00*

U.S. Cl. 43—42.14 **10 Claims**



A fishing lure comprising a spring wire body having a plurality of objects each axially slidable thereon including at least one spinning disk rotatably carried on said wire body, said disk having fins thereon by which said disk spins in water when said lure is pulled therethrough, said disk being substantially flat planar except for pitched fins formed about the circumference thereof, said fins extending substantially continuously about said circumference.

3,766,683

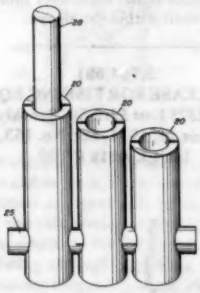
MUSICAL AMUSEMENT DEVICE

Jorma Vennola, Princeton, N.J., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 227,820

Int. Cl. A63h *33/06, 5/00*

U.S. Cl. 46—17 **15 Claims**



A musical toy or amusement device that includes an elongated wooden dowel adapted to be compressed circumferentially. A plurality of cylindrical wooden members are provided, each of the members having a first borehole near one of its ends. The first borehole is oriented radially in each member and is proportioned to receive and compress the dowel. Each member also has a second axial borehole in its other end forming a cavity of different size in each member. In a preferred embodiment of the invention, the cylindrical members are of different lengths, the gradation of lengths corresponding to the gradation of cavity sizes of the members.

3,766,684

APPARATUS FOR HYDROPONIC CULTIVATION

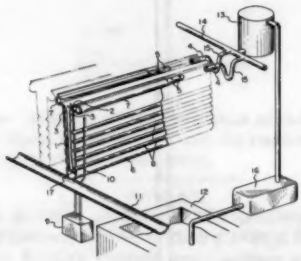
Naoe Kato, 386 Nagano-ken, Veda-shi, Midorigaoka 1-chrome 25-ban 18-go, Nagano-ken, Ueda-shi, Japan

Filed Dec. 3, 1971, Ser. No. 204,532

Claims priority, application Japan, Dec. 11, 1970, 45/110724; Dec. 11, 1970, 45/124134; Dec. 11, 1970, 45/124136; Dec. 11, 1970, 45/124137; Dec. 11, 1970, 45/124138

Int. Cl. A01g *31/02*

U.S. Cl. 47—1.2 **17 Claims**



An apparatus for hydroponic cultivation designed to hold a plant in a suspended state, establish contact between the root of the plant a screen for flowing a nutrient solution disposed outwardly of the root. The nutrient solution is fed from above the screen to flow down therealong so that the nutrient solution may be fed to the root without immersing the root in the nutrient solution. The nutrient solution is circulated for reuse. The root contacts air. A satisfactory cultivation free from the decay and undergrowth of the results.

3,766,685

SOIL CONDITIONER

Walter J. Nickerson, Middlesex, and Marcel D. Faber, New Brunswick, both of N.J., assignor to the Firestone Tire & Rubber Co., Akron, Ohio

Filed May 10, 1972, Ser. No. 251,908

Int. Cl. A01g *9/10*

U.S. Cl. 47—37 **12 Claims**

Soil conditioner is produced by fermentation of used tire mesh to produce an oxygen enriched product integrally bonded to the mycelium produced by the fermentation organism.

3,766,686

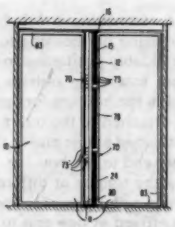
REVOLVING DOOR OPERATING AND SPEED CONTROL MECHANISM

Amuel E. Sheckells, Evansville, Ind., assignor to International Steel Company, Evansville, Ind.

Filed Dec. 21, 1971, Ser. No. 210,385

Int. Cl. E05d *15/02*

U.S. Cl. 49—43 **19 Claims**



The power drive and speed control means for a revolving door along with related electrical control circuitry and

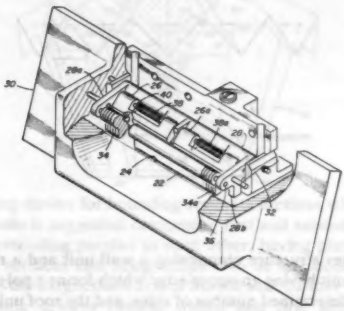
mechanical components are all contained compactly in the center shaft or column of the door structure. Costly and time-consuming servicing of parts mounted in the ceiling or floor is eliminated.

3,766,687

APPARATUS FOR ENTRY CONTROL

Bryan K. Henson, Dallas, Tex., assignor to Docutel Corporation, Dallas, Tex.

Filed Feb. 16, 1972, Ser. No. 226,916
Int. Cl. E05b 63/00
U.S. Cl. 49—35 23 Claims



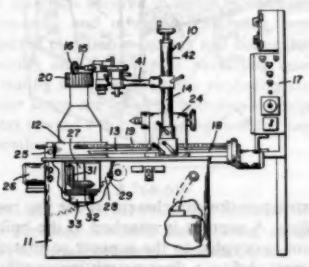
Coded credit cards are becoming increasingly more an accepted means for controlling the operation of dispensing systems of various categories and kinds. The coded credit card is inserted into the dispensing machine wherein various checking and dispensing functions are performed as a result of information obtained from the coded card. An entry gate to the dispensing machine prohibits improperly sized credit cards and miscellaneous debris from being inserted into the system. Entry of undesirable credit cards and debris is prevented by the entry gate that is locked except upon presentation of a correctly sized card into a card throat. A properly sized card actuates two triggers each of which displace a locking bar to a position allowing free movement of the entry gate. Upon movement of the locking bar a properly sized credit card may be inserted into the dispensing system past the entry gate. The inner face of the entry gate is formed by an arcuate section. As a credit card is being returned to a user, it engages the arcuate section lifting the gate and allowing removal of the card.

3,766,688

GEAR TREATMENT APPARATUS

Joseph A. Maytay, 174 Whitney Street, Northboro, Mass.

Filed July 9, 1971, Ser. No. 161,187
Int. Cl. B24b 5/36
U.S. Cl. 51—89 4 Claims



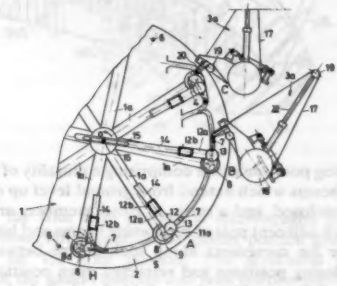
A gear treatment apparatus, including a workhead for supporting and rotating a gear and a wheelhead having an abrasive wheel resiliently pressed against the gear.

3,766,689

APPARATUS FOR GRINDING THE CONTOUR EDGE OF ELONGATED BODIES, IN PARTICULAR CUTLERY

Karl O. Oberlander, Hugo Febler, both of Geislingen; Hans Schmacher, Schlosshalde, and Karl Widenhofer, Kuchen, all of Germany, assignors to Wurttembergische Metallwarenfabrik, Geislingen/Steige, Germany

Filed Jan. 13, 1972, Ser. No. 217,527
Claims priority, application Germany, Jan. 15, 1971, P 21 01 851.9
Int. Cl. B24b 21/02
U.S. Cl. 51—145 T 18 Claims



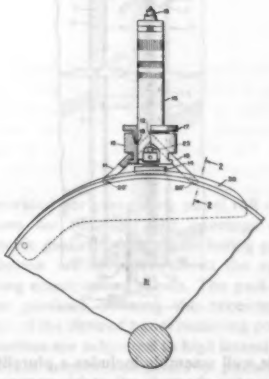
An apparatus for grinding the contour edge of elongated bodies with at least one swivellable grinding unit which has a driven grinding tool pressable directly or indirectly onto the workpiece and a feeler roller controlling the pressure which may be moved along a pattern curve corresponding to the workpiece. A workpiece holder is mounted on a movable base in such a way that it can be moved past the grinding unit for the processing of a longitudinal edge.

3,766,690

GRINDING TOOL

F. Clayton Meserve, North Andover, Mass., assignor to Bandag Incorporated, Muscatine, Iowa

Filed Sept. 24, 1971, Ser. No. 183,443
Int. Cl. B24b 3/36, 9/00
U.S. Cl. 51—173 5 Claims



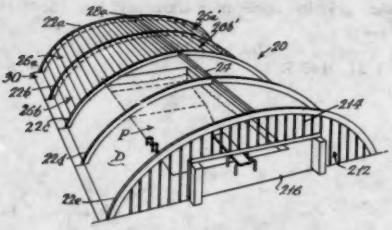
A tool for grinding and sharpening a blade which operates in a fixed helical path, that is to say, a tool constructed and arranged to maintain the same predetermined helical contour of the blade while being sharpened.

3,766,691

CONVERTIBLE POOL ENCLOSURE

George D. Ray, 211 E. Chicago Ave., Libertyville, Ill.

Filed Dec. 2, 1971, Ser. No. 204,279
Int. Cl. E04b 1/32, 7/16; E04h 3/19
U.S. Cl. 52—71 13 Claims



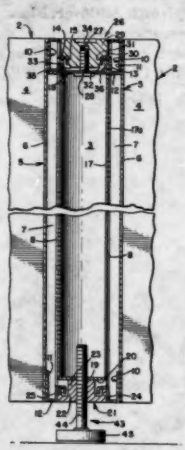
A swimming pool enclosure comprising a plurality of arched supporting beams which extend from ground level up over an area to be enclosed, and a series of panel members arranged between each adjacent pair of supporting beams and hinged to one another for movement along such beams between extended enclosing positions and retracted open positions, the panels in the latter positions being folded and stacked relative to one another.

3,766,692

PORTABLE WALL ASSEMBLY

Forest G. Stark, Chagrin Falls, and Melvin A. Textoris, Struthers, both of Ohio, assignors to The General Fireproofing Company, Youngstown, Ohio

Filed Mar. 17, 1972, Ser. No. 235,535
Int. Cl. E04f 13/08
U.S. Cl. 52—71 7 Claims



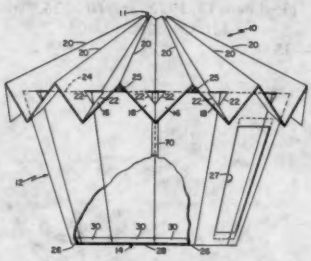
A portable wall assembly includes a plurality of panel elements having edge channels adjustably engageable with vertical support posts. Each panel is secured to a post by means of a pair of hook-type mounting clips carried by the upper and lower limits of each panel channel and insertable within annular cavities provided at the top and bottom of the post after which a removable cap is applied at the top of the post to firmly clamp both clips.

3,766,693

SHELTER STRUCTURE

Sumner F. Richards, Jr., 93 Harris St., and Charles S. Biechler, 14 Newton Rd., both of Acton, Mass.

Filed Mar. 1, 1972, Ser. No. 230,884
Int. Cl. E04b 1/343; E04h 1/12
U.S. Cl. 52—71 17 Claims



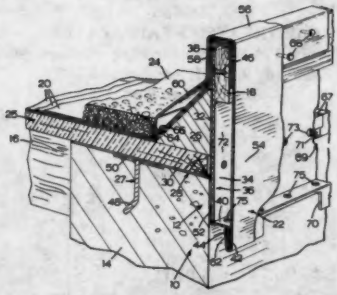
A shelter structure comprising a wall unit and a roof unit, the wall unit having an upper edge which forms a polygon having a predetermined number of sides, and the roof unit subunit a like predetermined number of subunits, each roof subunit having a peripheral edge and two lateral edges which extend from opposite ends of the peripheral edge and converge, each sub being folded along a fold line which extends perpendicularly from the peripheral edge intermediate the lateral edges, each subunit including an opening in the material thereof on each side of the fold line, and each opening having a portion of the wall unit upper edge extending therethrough.

3,766,694

FASCIA STRUCTURE

Edward P. Minialoff, 3703 Beechollow Cres., Mississauga, Ontario, and Joseph M.. Minialoff, 5 Winterbourne Cres., Islington, Ontario, both of Canada

Filed Apr. 16, 1971, Ser. No. 134,722
Claims priority, application Canada, Feb. 17, 1971, 105,585
Int. Cl. E04d 3/38; E04b 1/70
U.S. Cl. 52—95 4 Claims

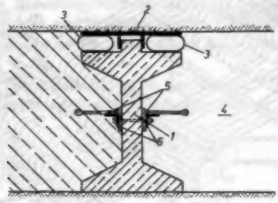


A fascia structure for attachment about the roof of a flat roofed building. A support is attached to the building and a fascia element is coupled to the support so that the support and the element define a duct permitting ventilation air to flow to and from openings in the support in registration with roof insulation. Layers of weatherproof material are attached to the support by nailing through the layers into a forward face of a wood strip forming part of the support.

3,766,695
SEALING DEVICE FOR BOUNDING CONCRETE SECTIONS WHEN MAKING SLIT WALLS

Johann Morner, Kurf 7, Endorf, Germany

Filed July 19, 1971, Ser. No. 163,980
Claims priority, application Germany, July 28, 1970, P 20 37 370.0
Int. Cl. E04g *21/00*; **E02d** *7/00, 27/00*
U.S. Cl. 52—127 **4 Claims**

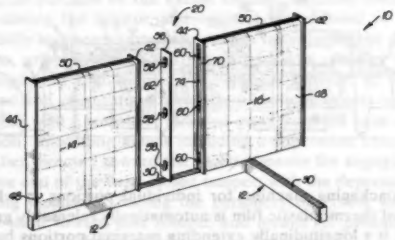


A sealing device for bounding concrete sections when making slit walls is suggested comprising first and second vertical profiles extending parallel to each other, having plane earth-touching surfaces and being adapted to be telescoped transversely of the longitudinal axis of the slit wall, further comprising pressing devices built-in within said first and second profiles so that the latter can be presse apart from each other as much as desired toward the side walls of the excavated slot with the aid of said pressing devices, and wherein said first profile is a steel reinforced concrete profile and said second profile is a steel profile.

3,766,696
DEMOUNTABLE WALL PARTITION SYSTEM

Edward Peter Totoonchie, Van Nuys, Calif., assignor to Versa Wall Inc., Canoga Park, Calif.

Filed Feb. 4, 1972, Ser. No. 223,460
Int. Cl. E04b *1/40, 2/08*
U.S. Cl. 52—241 **2 Claims**



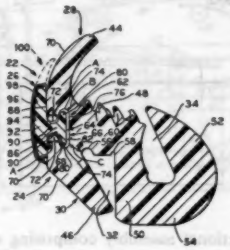
A demountable wall partition system comprising a plurality of partition members secured in series by coupling means including outwardly and upwardly extending connectors on ends of adjacent partition members and connector strips carrying outwardly and downwardly extending connectors for releasably mating with the upwardly extending connectors as the connector strips are lowered between the adjacent partition members toward a floor-engaging base for supporting the partition members.

3,766,697
RUBBER GASKET WITH PLASTIC MOLDING INSERT

Norman C. Jackson, Sheffield Lake, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Filed Sept. 22, 1971, Ser. No. 182,738
Int. Cl. E04f *19/02*
U.S. Cl. 52—312 **3 Claims**

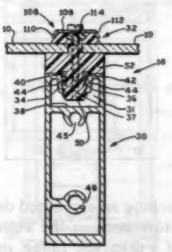
A gasket and decorative trim assembly is provided for mounting a fixed window panel such as a windshield relative to the window opening in a vehicle and for sealing the joint between the window panel and vehicle. The assembly includes a gasket portion by which the mounting and sealing is achieved and a trim strip portion which provides the marginal area of the mounted window panel with a decorative appearance. The gasket portion is produced from rubber material and the trim strip portion is interengaged therewith by cooperative slot means in the gasket portion and projection means on the trim portion. The structural relationship between the gasket portion and trim portion provides for the use of narrower gasket components and/or wider trim strip components than heretofore possible.



3,766,698
MEANS FOR PREVENTING PANEL ROLL OUT IN A PANEL MOUNTING SYSTEM

John A. Dallen, Port Clinton, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Filed Aug. 23, 1971, Ser. No. 173,967
Int. Cl. E06b *1/40*
U.S. Cl. 52—400 **4 Claims**



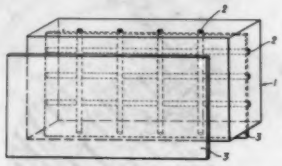
Means are provided for preventing panel roll out in panel mounting systems for building wall openings or the like wherein elastomeric gasket members, including panel receiving channels therein are mounted about the openings for sealingly receiving construction panels. The gasket members include resilient portions defining the receiving channels which deflect out of the desired panel receiving position when the panels themselves are subjected to high lateral forces. The roll out prevention means comprises a plurality of rigid bracket members spaced along and affixed so as to closely embrace a portion of the outside of the gaskets in order to retain the resilient positions in the desired panel sealing condition. Elongated bolts or other suitable fasteners are used to retain the brackets in position on the gaskets and may also aid in retaining the gaskets themselves in position relative to the openings.

3,766,699

CONSTRUCTIONAL ASSEMBLY, E. G. FOR CONSTRUCTING BUILDINGS, CONTAINERS AND VEHICLE BODIES

Anton H. Dinkel, Mittlere Flur 4, Wertheim, Main, Germany

Filed June 2, 1972, Ser. No. 259,071
Claims priority, application Austria, June 4, 1971, 4853
Int. Cl. E04b 2/14; E04c 2/26, 2/52
U.S. Cl. 52—592 13 Claims



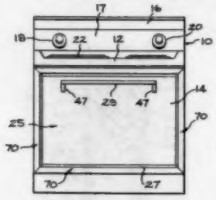
A constructional assembly comprising a core part having non-intersecting channels therethrough which cross over each other, the channels being adapted to receive both clamping elements, for detachably interconnecting adjacent constructional assemblies, and also wiring and piping, and the channels extending parallel to side wall surfaces of the core part; at least one load-bearing cover plate which is disposed adjacent a said side wall surface and which is offset in relation to the core part, the core part being less dense than the cover plate and at least one stiffener member which covers a region of the core part which is not covered by a cover plate.

3,766,700

DECORATIVE TRIM STRIP MOUNTING MEANS

James J. Nuss, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 6, 1972, Ser. No. 231,902
Int. Cl. E04c 2/38; F24c 15/02
U.S. Cl. 52—624 7 Claims



A means for attaching an elongated decorative trim strip to a supporting structure such as the sides of a domestic oven door, a cooktop of a domestic range, or the front panel of a built-in dishwasher. The door is supplied with a plurality of spring clips. The trim strip is of angular configuration and it has folded edges with one edge fitted against a raised ledge of a front panel of the door and the other edge being retained by the spring clips which bear at their opposite ends against the inner side of the raised ledge.

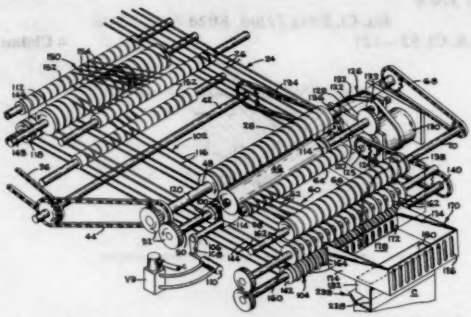
3,766,701

METHOD OF AND APPARATUS FOR PACKAGING FLEXIBLE ARTICLES

Orrin H. Besserdich, and Donald C. Crawford, both of Green Bay, Wis., assignors to FMC Corporation, San Jose, Calif.

Filed Nov. 12, 1971, Ser. No. 198,385
Int. Cl. B65b 5/06, 35/50, 35/54
U.S. Cl. 53—26 6 Claims

A packing method, and apparatus for effecting the method, wherein a stack of flexible articles such as film bags are positioned over a support having a narrow aperture extending from one edge of the stack to the opposed edge so that the central portion of the stack is unsupported. An open top carton is positioned beneath the aperture, and an overhead plunger with line contact on the top of the stack pushes downward in alignment with the aperture to buckle the stack of bags and force them through the aperture into the carton.



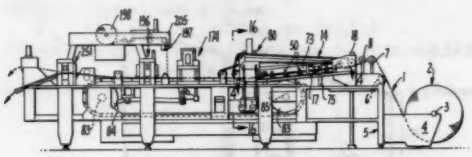
While one stack of bags is being packed, some of the first bags of the next stack are diverted from the conveying path, and are followed by subsequent bags. This diverting operation thus allows time for the packaging operation without interruption of the continuous output of the machine supplying the bags.

3,766,702

PACKAGING MACHINE FOR INDIVIDUAL PORTIONS, AND METHOD

Konrad E. Meissner, Lafayette; William A. Lane, Danville, and Edwin J. Pelster, Pleasanton, all of Calif., assignors to Filper Corporation, San Ramon, Calif.

Filed Dec. 15, 1971, Ser. No. 208,178
Int. Cl. B65b 47/02
U.S. Cl. 53—30 7 Claims



A packaging machine for individual portions in which a strip of thermoplastic film is automatically releasably gripped along it s longitudinally extending marginal portions by rows of gripping elements and while so gripped, the film is moved in a forward direction and is progressively heated by a heater and progressively tautened transversely of its movement as it softens. After leaving the heater and while still gripped, the softened film is positioned over upper mold forms at a cup-forming station at one end of the upper run of an endless row of such forms which upper run is moved in said forward direction toward a filling and sealing station successively spaced from said one end. A lower mold form at said cup-forming station is moved against the upper mold form to form the cup-mold and mechanical and suction means forms a plurality of cups in the film after which the marginal grippers and the lower mold form automatically release the film for movement to the filling station where the cups in the film are filled, and the filled cups are then moved to the sealing station while the cups are still in the upper mold forms. At the sealing station a cover sheet is positioned over the cups and is heat sealed to the upper surface of the film around the cup openings during uniform application of pressure against the upper and lower sides of the film at said surface, and finally the film and filled, sealed cups are

moved out of the upper mold forms and the cups are cut from the film to provide filled and sealed individual packages.

3,766,703

PROCESS AND APPARATUS FOR THE SHAPE-RETAINING CLOSURE OF AT LEAST ONE EXTREMITY OF A TUBULAR PACKAGE, ESPECIALLY TAMPONS FOR FEMININE HYGIENE AND PRODUCT PRODUCED THEREBY

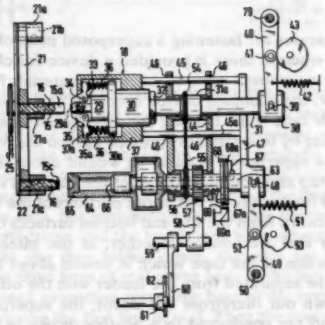
Stefan Simon, Moedling/Niederosterreich; Justus Wolff, Wuppertal-Elberfeld, and Wolfgang Johst, Gevelsberg, all of Germany, assignors to Dr. Carl Hahn KG, Duesseldorf, Germany

Filed Dec. 22, 1970, Ser. No. 86,778

Claims priority, application Germany, Nov. 5, 1969, P 19 55 600.4

Int. Cl. B65b *7/12*

U.S. Cl. 53—38 **34 Claims**



Process and apparatus for twist closing one end of a tubular wrapper containing a tampon with a rounded head directed toward the end of the wrapper being closed and excess tubular wrapper material extending past the rounded head thereof including axially rotatable gripper means adapted to grip the marginal portions of the excess tubular material; means for maintaining the tampon and wrapper therearound in a substantially stationary condition; means for rotating the gripper means, gripping the excess tubular material, relative to the remainder of the tampon and wrapper thereon to form a twisted end closure and a rosette of twisted excess wrapper material with a periphery directed away from the twist-closed tampon; smoothing means including a depression containing member directed toward the rosette; means for engaging the rosette end of the twist-closed tampon with the depression including means for folding the periphery of excess wrapped upon itself toward said rosette; and means for pressing said rosette toward the rounded end of said tampon.

3,766,704

PACKAGE FORMING MACHINE

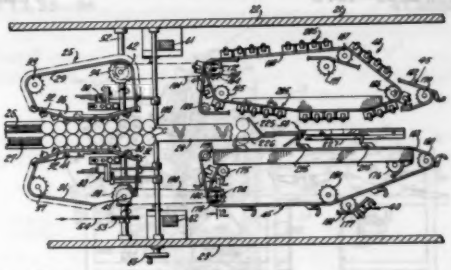
Robert H. Ganz, Bergenfield, N.J., assignor to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 862,567, Aug. 1, 1969, Pat. No. 3,627,309, which is a division of Ser. No. 670,882, Sept. 27, 1967, Pat. No. 3,550,754. This application Oct. 8, 1970, Ser. No. 79,177

Int. Cl. B65b *17/02, 21/24*

U.S. Cl. 53—48 **9 Claims**

This invention relates to an apparatus for forming a package from a plurality of containers and a wrap-around carrier blank. The apparatus includes a mechanism for transferring a blank from a hopper to a mechanism which applies the same to a group of bottles. The mechanism includes means for at least partially separating a lowermost blank from immediately adjacent blanks and a pair of articulately mounted gripping heads which prevent slippage between each gripped blank and the heads, as well as means for bowing each blank during the removal thereof. Articles about which the blanks are wrapped are bottom-supported by individual grouped supporting elements while being conveyed by pusher lugs. Means are provided for conveying different numbers of articles and/or different sizes thereof and means are provided for adjusting the



relative position of each pusher lug and associated supporting elements depending upon the particular number and/or size of containers being conveyed. The pusher lugs are articulately carried by endless members to compensate for inaccurately sized articles and prevent breakage or damage thereto during the conveying operation.

3,766,705

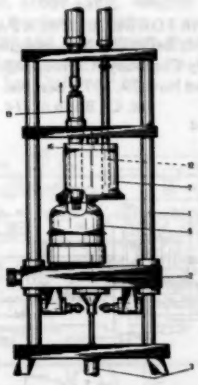
DEVICE FOR DILLING A CONTAINER OF THE DISPOSAL TYPE WITH A GAS

Matheus Johannes Martinus Coppens, Heide-Kalmthout, Belgium, assignor to Koninklijke Emballage Industrie Van Leer N.V., Amstelveen, Netherlands

Filed July 2, 1971, Ser. No. 159,298

Int. Cl. B65b *31/02*

U.S. Cl. 53—88 **1 Claim**



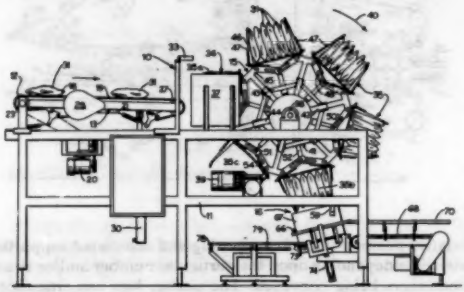
A device for filling a container of the disposable type with a gas which includes a frame, a vertically movable container support attached to the frame and rotatable about a central axis, a bell attached to the frame and rotatable about the central axis, and a stationary center portion sealingly directed relative to the bell. The bell has a circular sealing portion on the lower extremity thereof eccentrically mounted with respect to the central axis which is connectable to the filling opening of a container. The stationary center portion is comprised of a sealing means and a filling pipe. The filling pipe is vertically movable and alignable with the circular sealing portion of the bell. The sealing means also is vertically movable and alignable with the circular sealing portion of the bell for capping the container after it has been filled.

3,766,706

CASE PACKER

Robert H. Graham, Spokane, Wash., assignor to R. A. Pearson Company, Spokane, Wash.

Filed Dec. 30, 1971, Ser. No. 213,996
Int. Cl. B65b *63/02*
U.S. Cl. 53—124 D 9 Claims



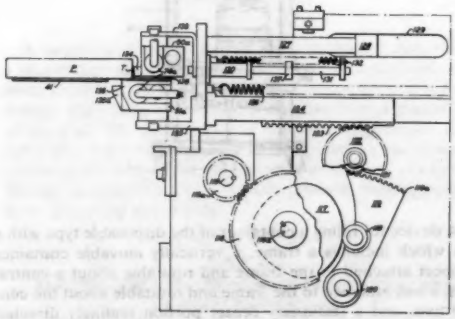
A case packer for grouping and packing product-containing flexible bags in the form of enclosed pillows or packets into cartons used for shipping purposes. The machine includes a vertically pivotal conveyor for successively feeding and stacking the bags between paired radial jaws of a vertically oriented wheel. After receiving a set number of bags, the jaws are activated to close, gripping and compressing the grouped bags. The wheel is rotatably indexed to bring each set of loaded jaws to a carton loading station. A carton is lifted to partially enclose the bags as the jaws are relaxed, allowing the bags to fall into the box, which is then removed for further processing or shipment.

3,766,707

MACHINE FOR SECURING A PACKAGE TAB

James Alexander, Belleville, N.J., assignor to Scandia Packaging Machinery Company, Clifton, N.J.

Filed Nov. 29, 1971, Ser. No. 200,494
Int. Cl. B65b *61/14*
U.S. Cl. 53—134 6 Claims



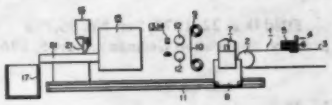
A machine is provided for securing a tab to a package, flattening the projecting tab and punching a hole through the tab. The package is intermittently fed along a table or support to three successive stations where the three operations are performed. The tab applied by this machine is secured to two adjacent sides of the package.

3,766,708

APPARATUS FOR FASTENING A SUPERPOSED MASS OF SHEET-LIKE MATERIALS

Mitsuo Kubo, Tokyo; Shunichi Nakajima, Yokohama, and Shigeo Horino, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Nov. 9, 1971, Ser. No. 197,019
Claims priority, application Japan, Nov. 13, 1970, 45/99726
Int. Cl. B65b *13/20*
U.S. Cl. 53—124 D 17 Claims



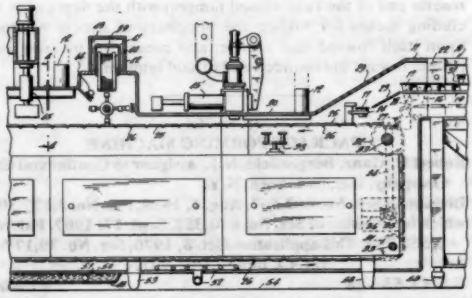
An apparatus for fastening a superposed mass of sheet-like materials wherein there is provided a device for clamping an incoming superposed mass of sheet-like materials from above and below; the clamping device is carried to a feeder of heat contactible tape while holding the superposed mass; the tape is drawn out by being initially pressed against the forward end face of the superposed mass to be wound about the forward end face, top and bottom surfaces of the clamped mass; when the tape is further drawn out, those portions of the tape which extend outward from the top and bottom surfaces of the mass at its rear end are welded together; at the same time that looped portion of the tape which is wound about the mass is cut off to be separated from the feeder with the other portion being drawn out therefrom left uncut; the superposed mass thus wound are conducted to a heating device in a clamped state for thermal contraction of the tape so as to be tightly fastened together; and finally the fastened mass is taken outside by a withdrawing device.

3,766,709

STERILIZING DEVICE FOR CONTAINER FILLING MACHINES

Sol Zausner, Mountainside, N.J., assignor to Zausner Foods Corp., Mountainside, N.J.

Filed Jan. 28, 1972, Ser. No. 221,521
Int. Cl. B65b *55/10*
U.S. Cl. 53—167 7 Claims



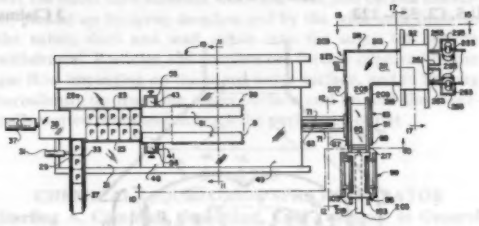
Various parts of an automatic container filling and capping machine are improved with respect to the feeding and denesting of the containers, the provision of a sterilizing tunnel having a removable cover, modified forms of sterilizing medium inlets and transport of the containers as well as other details of construction which render the machine more efficient.

3,766,710

APPARATUS FOR CLOSING PLASTIC BAGS

Ralph C. Goodwin, and Larry E. Buxton, both of Minneapolis, Minn., assignors to Bemis Company, Inc., Minneapolis, Minn.

Filed Jan. 18, 1972, Ser. No. 218,680
Int. Cl. B65b 7/06, 51/14
U.S. Cl. 53—373 6 Claims



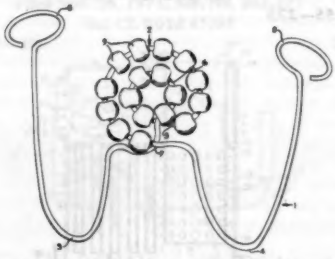
A baler bag is packed and brought to a first station where its open mouth is spread flat by means of a pair of spreading fingers which enter the mouth and move laterally outward to form a flap at the top of the bag extending laterally of the bag with ears at its ends. This flat is sealed on a first line of seal extending lengthwise of the flap transversely of the bag and reading into the ears, but terminating short of the fingers. The fingers are withdrawn and the bag is moved to a second station where, with the flap folded down, the ears are sealed on second and third lines of seal at the ends of the top of the bag contents, each extending across the base of the respective ear and intersecting the first line of seal. Then the ears are cut off outside the second and third lines of seal.

3,766,711

MOUTHPIECES FOR ANIMALS

Lascelles Arthur Lucas, Hertford, England

Filed May 20, 1971, Ser. No. 145,270
Claims priority, application Great Britain, June 6, 1970, 27,441/70
Int. Cl. B68b 1/06
U.S. Cl. 54—8 8 Claims



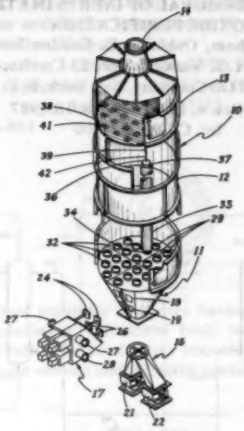
A mouthpiece for an animal, such as a horse, includes a generally flat mid-portion and lateral portions which, when the mid-portion is received between the molar teeth of the animal, project one from each side of the animal's mouth. A bridle or halter can be attached to the lateral portions to hold the mouthpiece in position. The mid-portion includes a number of beads carried on a rod which is bent to a non-rectilinear shape.

3,766,712

FABRIC TUBE TYPE DUST COLLECTOR METHOD

Eugene D. Schaltenbrand, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Dec. 14, 1971, Ser. No. 207,786
Int. Cl. B01d 46/04
U.S. Cl. 55—96 4 Claims



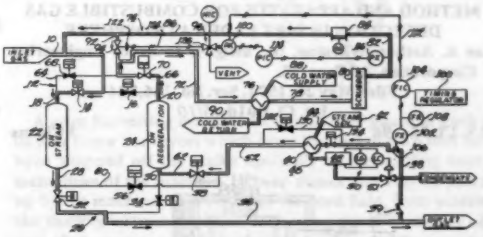
An arrangement for removing contaminant particles from a gas stream which includes providing a preselected null period during which time charges on the fabric tubes of a tube type dust collector are allowed to dissipate thereby facilitating cleaning thereof.

3,766,713

OUTPUT CONTROL FOR STEAM HEATED HEAT EXCHANGER

Silvester C. Leonard, Dallas, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 789,162, Jan. 6, 1969, Pat. No. 3,587,726.
This application Jan. 4, 1971, Ser. No. 103,603
Int. Cl. B01d 53/04
U.S. Cl. 55—21 21 Claims



A multiple tower gas dehydration system is disclosed wherein the regeneration gas is heated in a steam heated heat exchanger, with the heat exchanger in open communication with a steam generator. After passage through the regenerating tower, the regeneration gas passes through dehydrating components, then through a continuously operated motor-driven compressor, and is returned to the wet gas input. A bypass including a variable control valve is connected between the return line to the wet gas line and the regenerating gas outlet from the towers to provide a recirculating loop through the regeneration gas dehydrating components and the compressor. The variable control valve is automatically selectively controlled in response to either the pressure in the recirculating loop or the differential between a timed flow regula-

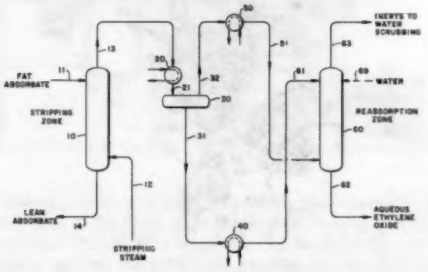
tor signal and the rate of flow of the regenerating gas through the heat exchanger, whereby this control valve provides regulated control over the flow of regeneration gas for regulated gradual change in demand upon the steam generator.

3,766,714

SECONDARY REMOVAL OF INERTS IN ETHYLENE OXIDE PURIFICATION

Jack W. Cunningham, Oakland; E. Gordon Foster, Emeryville, and Robert G. Vanderwater, El Cerrito, all of Calif. assignors to Shell Oil Company, New York, N.Y.

Filed Oct. 4, 1971, Ser. No. 185,987
Int. Cl. B01d *19/00*
U.S. Cl. 55—48 7 Claims



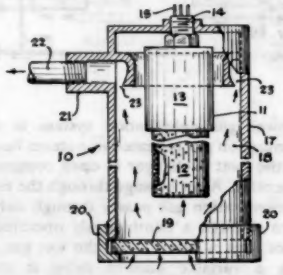
Small amounts of inert gaseous components in admixture with ethylene oxide and water vapor are removed therefrom, and the ethylene oxide recovered as an aqueous fraction, by (a) cooling the mixture so as to effect its partial condensation; (b) phase separating the partially condensed mixture into condensate and vapor fractions; (c) separately cooling the condensate and vapor fractions to a temperature no lower than 11° C; (d) countercurrently contacting the cooled condensate with at least a portion of the cooled vapor fraction in an ethylene oxide reabsorption zone; and (e) removing from the reabsorption zone an inerts vent as overhead and an aqueous ethylene oxide fraction, substantially free of inerts, as bottoms.

3,766,715

METHOD AND APPARATUS FOR COMBUSTIBLE GAS DETECTION IN DIRT LADEN ATMOSPHERE

Lee A. Archer, Wheaton, Ill., assignor to Erdco Engineering Corporation, Addison, Ill.

Filed May 26, 1971, Ser. No. 146,884
Int. Cl. B01d *46/10*
U.S. Cl. 55—96 3 Claims



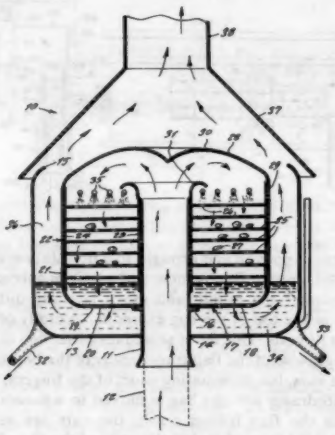
A diffusion type head for detection of combustible gas is placed within an enclosure. At least part of the wall forming the enclosure is of an air filtering material. A conduit communicating with the interior of the enclosure has a vacuum applied thereto so that a draft of air exterior of the enclosure is drawn through the filter and about the diffusion type detector. Periodically the vacuum is shut off and a blast of gas under pressure is applied to the conduit to create a reverse flow through the filter and clean out the filter.

3,766,716

ANTI-POLLUTION AND HYDROMOGENIZATION

Rene A. Ruiz, 8100 Lenore Dr., Houston, Tex.

Filed Aug. 30, 1971, Ser. No. 175,965
Int. Cl. B01d *47/02*
U.S. Cl. 55—223 3 Claims



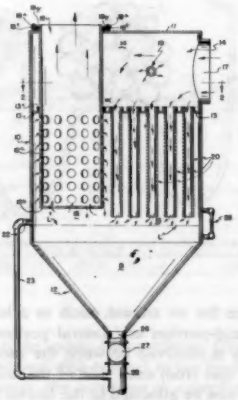
Apparatus for removing particles from smoke has a preliminary filter unit including perforate plates with charcoal lumps thereon, liquid spray jets, a cap for deflecting smoke past the spray and through the filter unit, a tank including liquid maintained at a level sufficient to submerge the lower ends of the filter walls therein whereby the smoke passes directly from the filter through the liquid for discharge to the atmosphere.

3,766,717

PARTICLE COLLECTOR FOR CLEANING GASES

Verland W. Belt, Richmond, Va., assignor to Josam Developments, Inc., Michigan City, Ind.

Continuation of Ser. No. 98,623, Dec. 16, 1970, abandoned.
This application June 12, 1972, Ser. No. 261,715
Int. Cl. B01d *47/02*
U.S. Cl. 55—223 10 Claims



A conically-sump-bottomed, vertical, cylindrical vessel is horizontally partitioned by a header plate loosely pendently

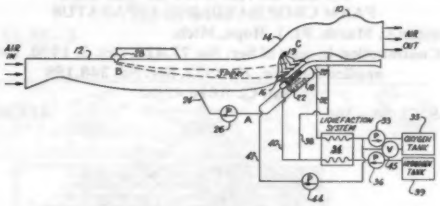
supporting an array of tubes into an upper gas inlet chamber with a radial gas inlet and, above a sump water level, a lower gas flow chamber wherein a mist abating perforated end of a vertical cylindrical outlet duct is eccentrically located remotely from the inlet. The array of tubes with upper ends projecting loosely through and slightly above the plate directs gas from the inlet chamber against the water surface in the sump. Water, nozzle-sprayed into the incoming gas both wets the tube inner surface and collects on the plate to seep between the plate and (a) tube ends, (b) duct, and (c) vessel wall to wet the outer tube surfaces, duct and wall, and carries material, picked up by spray droplets and by the wide area films on the tubes, duct and wall, down into the sump for bottom withdrawal. Particles and droplets are further captured by the gas flow impinging on the sump water surface, and in flowing turbulently up from the water surface and around the externally wetted tubes and through the perforated outlet.

3,766,718

CHEMICAL LIQUID OXIDE SPRAY SEPARATOR

Sterling A. Campbell, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Mar. 11, 1965, Ser. No. 440,069
Int. Cl. B01d *47/00*
U.S. Cl. 55—228 **5 Claims**



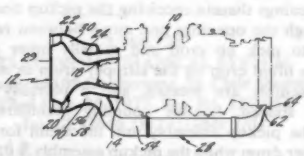
Apparatus for collecting oxygen from air which employs a substance having two oxidation states that absorbs oxygen when introduced into the air. The oxygen laden substance is then removed from the air by a centrifugal separator and reduced to produce oxygen.

3,766,719

PARTICLE AND MOISTURE SEPARATOR FOR ENGINE INLET

William J. McAnally, III, Lake Park, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 26, 1971, Ser. No. 202,277
Int. Cl. B01d *45/04*
U.S. Cl. 55—306 **2 Claims**



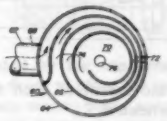
An improved separator for removing particles and moisture from the air entering the inlet to a gas turbine engine is disclosed and comprises a specially contoured passageway upstream of and in communication with the engine inlet. The passageway accelerates uncleaned air received into its inlet to a high axial velocity at a throat region, turns the air rapidly inward toward the separator axis with minimum pressure loss, splits the air flow into inner and outer streams by means of a splitter precisely located downstream of and radially inward of the throat, separates particles and moisture from the air into the outer stream due to their increased momentum from the high velocity developed at the throat region, and accumulates said particles and moisture in said air stream for later removal from the separator. In one embodiment specially cambered swirl vanes are provided upstream of the throat to increase the efficiency of the separator.

3,766,720

CENTRIFUGAL SEPARATOR

Carl Bloom, Springfield, Mass., assignor to Worthington Compressor and Engine International Division of Worthington Corporation, Holyoke, Mass.

Division of Ser. No. 14,306, Feb. 26, 1970, Pat. No. 3,654,748.
This application Nov. 1, 1971, Ser. No. 194,756
Int. Cl. B01d *45/12*
U.S. Cl. 55—461 **1 Claim**



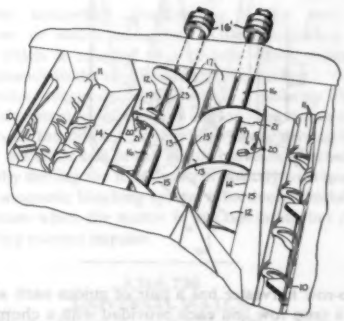
A centrifugal separator for gases having suspended liquid particles including a cylindrical body with a spiral baffle disposed therein. The contiguous convolutions of the baffle define alternate venturi and diffusing portions in the direction of gas flow.

3,766,721

HARVESTING MACHINE EQUIPPED WITH STONE GUARD

Howard T. Linsmeier, Saukville, Wis.

Filed Oct. 16, 1972, Ser. No. 297,871
Int. Cl. A01d *45/02*
U.S. Cl. 56—10.3 **7 Claims**



A corn harvesting machine having a stone guard in each of its four screw conveyors which carry the ears of corn that have been snapped off the stalks upwardly to the shelling instrumentalities of the machine, to keep stones that may be picked up by the machine, as it traverses the corn field, from entering the shelling instrumentalities; each stone guard consisting of a row of abutments welded to the inner surface of the trough of the screw conveyor and disposed transversely thereof to block passage of a stone being carried along by the flighting of the conveyor auger.

3,766,722

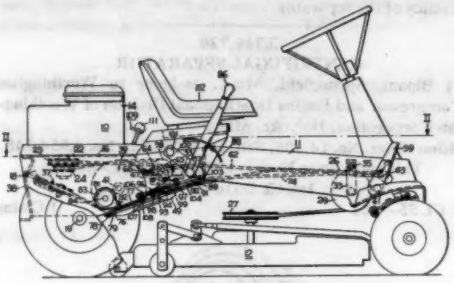
REVERSING SHUTTLE TRANSMISSION

Igor Kamlukin; William L. Stevenson, both of Mequon; George J. Vertanen, and Edward Freier, Jr., both of Port Washington, all of Wis., assignors to Simplicity Manufacturing Company, Inc., Port Washington, Wis.

Filed Sept. 18, 1972, Ser. No. 290,135
Int. Cl. A01d *69/08*
U.S. Cl. 56—11.6 **7 Claims**

A self-propelled riding lawnmower having a combined V-belt and gear transmission providing two forward speeds and two reverse speeds and wherein the operator can change

direction of travel with one control lever without shifting gears, and including linkage for simultaneously braking the



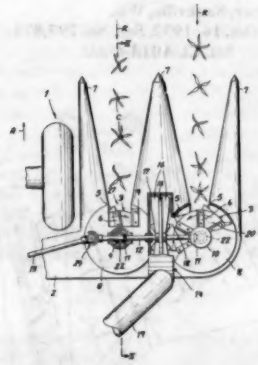
ground traversing movement of such mower while placing such transmission in neutral.

3,766,723

ROW-CROP HARVESTER

Martin Maier, and Josef Purrer, both of Gottmadingen, Germany, assignors to Maschinenfabrik Fahr A.G. Gottmadingen, Germany

Filed Nov. 6, 1972, Ser. No. 304,266
Int. Cl. A01d *45/02*
U.S. Cl. 56—13.3 **10 Claims**



A two-row harvester has a pair of guides each adapted to receive a crop row and each provided with a chopper-cutter which severs the crop at its base and chops it up. These chopper-cutters each have a rotor with a substantially vertical axis and each open inwardly into a blower having an impeller formed of a vertical disk whose faces are provided with radial vanes and which is situated between the chopper-cutters. A horizontal drive shaft serving as rotation axis for the blower is provided with a pair of bevel gears which mesh with bevel gears carried on the drive shafts of the cutter-choppers so as to rotate them in opposite senses.

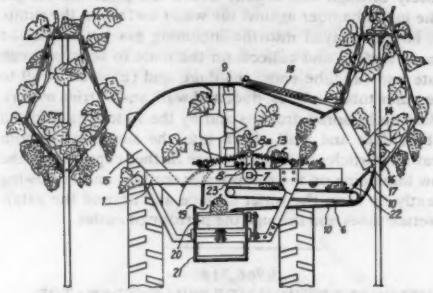
3,766,724

GRAPE HARVESTER

Rene Paillou, Bouteville Par Chateauneuf-sur-Charente, France

Filed Dec. 13, 1971, Ser. No. 207,317
Claims priority, application France, Dec. 24, 1970, 7046644
Int. Cl. A01g *19/00*
U.S. Cl. 56—331 **14 Claims**

A grape harvester adapted to cut off the grapes from a vine carried by a sloping trellis comprises an elongated casing arranged transversely, one end of which is provided with an input port cooperating with the grape cutting tool while a fan blows a draft of air through the casing to urge the leaves cut with the grapes through a corresponding output port and a conveyor belt leads the cut grapes to another corresponding



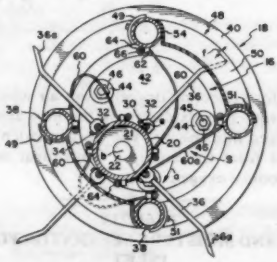
output, the grapes dropping finally onto a longitudinal conveyor belt leading them to the exhaust. The casing is advantageously adapted to execute limited pivotal and longitudinal movement.

3,766,725

FARM CROP HANDLING APPARATUS

Preston L. Marsh, Rt. 1, Hope, Mich.

Continuation-in-part of Ser. No. 77,428, Oct. 2, 1970. This application Apr. 27, 1972, Ser. No. 248,158
Int. Cl. A01d *43/02*
U.S. Cl. 56—364 **11 Claims**



Farm crop handling apparatus comprising a rotatable crop pickup assembly, including a plurality of longitudinally spaced, radially extending, pickup tines supported by a driven hub, a freely rotatable stripper drum, receiving the hub of the pickup assembly and having a plurality of longitudinally spaced openings therein receiving the pickup tines which extend through the openings and move between radially outer positions to pick up crop and radially inner positions to deposit the lifted crop on the stripper drum as the drum and pickup assembly are rotated, and a plurality of circumferentially spaced, flexible coupling members connected between the pickup assembly and the drum for driving the crop stripper drum when the pickup assembly is driven.

3,766,726

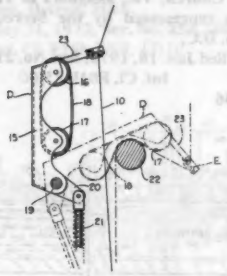
YARN GUIDE

Robert L. Carroll, 408 McIver Street, Greenville, S.C.

Filed Nov. 24, 1971, Ser. No. 201,832
Int. Cl. D02g *1/02*; B65h *51/14*, *57/06*
U.S. Cl. 57—90 **1 Claim**

A guide for use on texturizing machines having a yarn supply package, a yarn take-up package, and yarn texturizing apparatus disposed therebetween. A yarn driving device is positioned adjacent the texturizing apparatus for feeding the yarn from the supply package to the texturizing apparatus. A

yarn guide including vertically opposed overlapping inwardly extending yarn guiding surfaces is carried by the yarn driving device for positioning the yarn away from a driving roll during



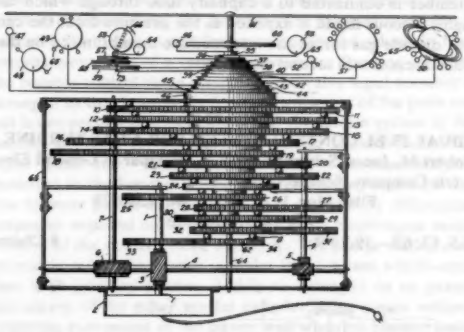
the stringing up of the yarn. When the driving device is placed in an operating position the yarn guide properly positions the yarn for the texturizing apparatus.

3,766,727

PLANETIME CLOCK

Frank T. Didik, 89-04 95th Avenue, Ozone Park, New York, N.Y.

Filed Aug. 12, 1971, Ser. No. 128,251
Int. Cl. G04b *19/26*
U.S. Cl. 58—3 1 Claim



The planetime clock represents the solar system in miniature and has a stellar background. Being synchronized to the true solar system and star zones, the relative position of each planet in relationship to each other and the constellations can be observed at all times. In particular it defines the earth and moon with their relative motions.

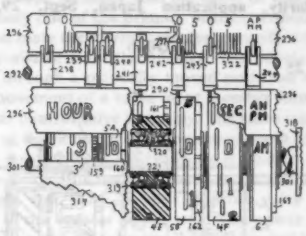
3,766,728

ELECTROMECHANICAL SYSTEM

Arthur A. Nagy, 26109 Cubberness, St. Clair Shores, Mich.

Filed Mar. 25, 1971, Ser. No. 127,952
Int. Cl. G04b *19/24*; G04c *3/04*
U.S. Cl. 58—4 A 12 Claims

A horological instrument comprising at least two time drums, means rotatably supporting said drums, motor means associated with said drums so that each is rotatably driven and so that one drum controls the rotation of the other drum, said other drum having means associated therewith which divides each revolution thereof into segments of rotation and revolving one segment of rotation for each revolution of said one drum, means constituting an alarm system for said instrument including electrical alarm means for giving off an alarm, a rotatably supported alarm drum corresponding to each time drum, normally open electrical switch means including a moveable contact arm thereof carried on each alarm drum, each alarm drum manually rotatable to a pre-set alarm position corresponding to an advance rotational position of the respective time drum, a laterally projecting trip arm associated with each time drum, each alarm drum disposed adjacent its corresponding trip arm so that the respective contact



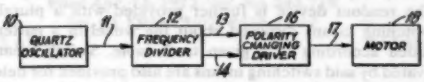
arm thereon is actuated by the trip arm once upon each revolution of the time drum to close the respective electrical switch means, the alarm means being energized upon simultaneous closing of all said electrical switch means.

3,766,729

QUARTZ CONTROLLED CHRONOMETER

Gunther Rudolph Diersbock, Watertown, Conn., assignor to Timex Corporation, Waterbury, Conn.

Filed Mar. 24, 1971, Ser. No. 127,724
Int. Cl. G04c *3/00*
U.S. Cl. 58—23 D 4 Claims



A quartz controlled timekeeping device such as a chronometer or watch comprises a high frequency quartz oscillator which is coupled to a divider which reduces the quartz frequency to the required output frequency.

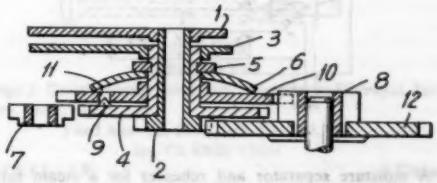
The divider output is connected to a polarity changing driver which energizes a polarized motor. The driver changes the polarity of the driving current after every driving impulse and drives the rotor coil of the motor between alternate positions thereby driving the index system directly with quartz accuracy. A magnetic blocking system effectively blocks the indexing system when the motor is not operating but releases with a driving current impulse.

3,766,730

UNIVERSAL WATCH

Motoki Kishida, Okaya-shi, and Yasuo Miwa, Suwa, both of Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed May 20, 1971, Ser. No. 145,354
Claims priority, application Japan, June 1, 1970, 45/46373
Int. Cl. G04b *19/22*
U.S. Cl. 58—42.5 2 Claims



A universal watch wherein the hour hand may be corrected incrementally by an hour or less in response to the pushing, pulling or turning a stem or shaft.

3,766,731

READOUT DEVICE FOR NUMERAL DISPLAY UNIT

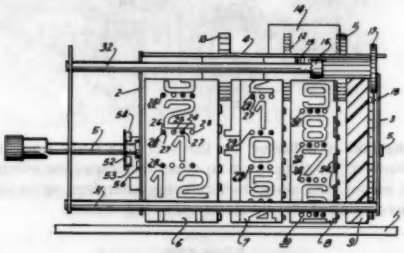
Shizuo Shigeta, Funabashi, Japan, assignor to Toyo Radio Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1972, Ser. No. 222,181

Claims priority, application Japan, Sept. 29, 1971, 46/89525

Int. Cl. G04b

U.S. Cl. 58—125 3 Claims



A readout device for a numeral display unit, such as a digital clock, of the type having a rotary numeral wheel with a plurality of numerals indicated thereon at successive positions angularly displaced with respect to the axis thereof is provided. The readout device is further provided with a plurality of switching means disposed about the wheel in a pattern encoded according to a given truth table. Switch means activated by said switching means are also provided for detecting the pattern and producing an electrical signal in response to the detection.

3,766,732

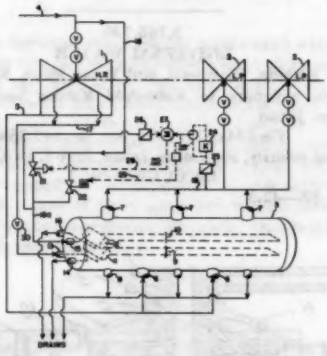
STEAM REHEATER CONTROL FOR TURBINE POWER PLANT

Sidney J. Woodcock, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 30, 1971, Ser. No. 185,268

Int. Cl. F01b *31/16*; F01k *19/10*; F01n *3/04*

U.S. Cl. 60—64 4 Claims



A moisture separator and reheater for a steam turbine power plant which uses a portion of the inlet steam in tube bundles to reheat lower pressure power plant cycle steam has a valve which controls the pressure of the reheating steam in the bundles as a proportional function of the lower pressure cycle steam.

3,766,733

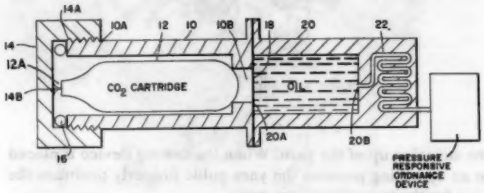
EXTENDED DURATION FLUIDIC TIME DELAY DEVICE

Tadeusz M. Drzewiecki, Gaithersburg, Md., and John M. Goto, Falls Church, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 18, 1972, Ser. No. 218,676

Int. Cl. F01k *25/00*

U.S. Cl. 60—36 10 Claims



A fluidic time delay device of long duration is provided by the use of two coacting fluids contained in two chambers separated by an intermediate displacable membrane or piston. The first chamber contains a first fluid consisting of carbon dioxide gas disposed in a pressurized cartridge. The second chamber contains a second fluid consisting of a highly viscous liquid. The first chamber is closed at one end by a screw-on cap provided with means for puncturing the carbon dioxide cartridge as the cap is screwed into place and the second chamber is connected to a capillary tube through which the highly viscous liquid is expelled as the pressure from the carbon dioxide gas forces the intermediate membrane to be displaced across said second chamber.

3,766,734

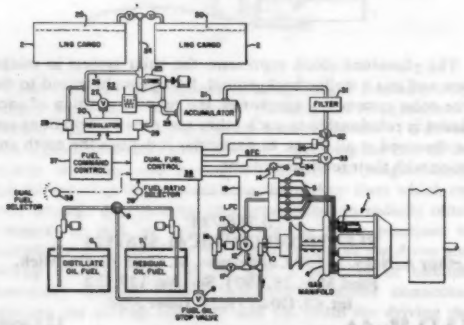
DUAL FUEL CONTROL SYSTEM FOR A GAS TURBINE

Robert M. Jones, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 1, 1972, Ser. No. 230,679

Int. Cl. F02c *9/08*

U.S. Cl. 60—39.28 R 8 Claims



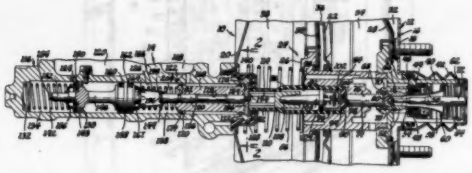
A fuel control system for a gas turbine for simultaneously burning a liquid fuel and a gas fuel according to the availability of and in preference for the gas fuel. In the embodiment shown, the gas turbine serves as a marine propulsion system for a tanker carrying liquid natural gas as a cargo with gas "boil-off" serving as a gaseous fuel source of variable availability. In addition to continuously modulating the fuel ratio based on gas flow rate availability, the system also allows operation on dual fuel at a selected ratio between fuels or automatic transfer to single fuel mode when either fuel falls below a minimum value.

3,766,735

BRAKE BOOSTER AND MASTER CYLINDER ASSEMBLY

Donald L. Nordeen, East Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 31, 1972, Ser. No. 258,248
Int. Cl. F15b *7/08, 13/10*
U.S. Cl. 60—550 3 Claims



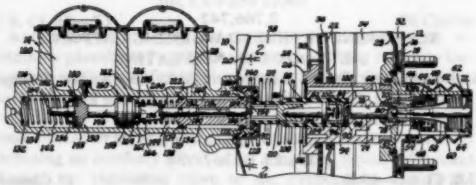
A master cylinder assembly has a secondary piston assembly and a primary piston assembly mounted in a common bore to provide a primary pressurizing chamber between the piston assemblies and a secondary primary chamber between the secondary piston assembly and one end of the bore. The primary piston assembly is composed of two concentric pistons, one extending through a bore in the other. Two input members are provided, one of which is arranged to move both primary pistons concentrically under brake booster power to actuate the master cylinder, and the other of which is arranged to move only one of the primary pistons, without moving the other, to actuate the master cylinder manually when no power assist is available from the booster. The booster assembly is actuated through a manually moved push rod which in turn permits movement of a valve input member forming a part of the booster control valve assembly. The valve input member is arranged so that it normally follows movement of the push rod but is not positively attached thereto. A reaction system in the booster provides for booster "feel" to be transmitted to the input push rod. The booster control valve assembly is mounted in the booster power wall. The power wall includes one or more power diaphragms and is actuated by differential pressures imposed on opposite sides of the diaphragms under control of the control valve assembly. The power wall is connected to move the master cylinder input means which actuates both primary pistons, and is so arranged as to permit movement of the other master cylinder input means without requiring movement of the power wall when no booster assist force is available.

3,766,736

MASTER CYLINDER FOR POWER AND NO-POWER ACTUATION

Donald L. Nordeen, East Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 31, 1972, Ser. No. 258,250
Int. Cl. F15b *7/08, 13/10*
U.S. Cl. 60—550 1 Claim



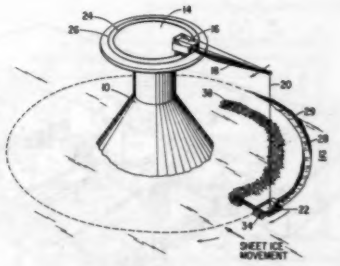
A master cylinder assembly has a secondary piston assembly and a primary piston assembly mounted in a common bore to provide a primary pressurizing chamber between the piston assemblies and a secondary primary chamber between the secondary piston assembly and one end of the bore. The primary piston assembly is composed of two concentric pistons, one extending through a bore in the other. Two input members are provided, one of which is arranged to move both primary pistons concentrically under brake booster power to actuate the master cylinder, and the other of which is arranged to move only one of the primary pistons, without moving the other, to actuate the master cylinder manually when no power assist is available from the booster. The booster assembly is actuated through a manually moved push rod which in turn permits movement of a valve input member forming a part of the booster control valve assembly. The valve input member is arranged so that it normally follows movement of the push rod but is not positively attached thereto. A reaction system in the booster provides for booster "feel" to be transmitted to the input push rod. The booster control valve assembly is mounted in the booster power wall. The power wall includes one or more power diaphragms and is actuated by differential pressures imposed on opposite sides of the diaphragms under control of the control valve assembly. The power wall is connected to move the master cylinder input means which actuates both primary pistons, and is so arranged as to permit movement of the other master cylinder input means without requiring movement of the power wall when no booster assist force is available.

3,766,737

PROTECTING OFFSHORE STRUCTURES FROM ICE

George C. Howard, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed Apr. 13, 1972, Ser. No. 243,719
Int. Cl. E02b *15/02*; B63b *35/12*
U.S. Cl. 61—1 4 Claims



This invention relates to a method of protecting a structure such as a vessel or platform located in water covered with sheet ice. In a preferred embodiment, an ice trenching machine is suspended from a boom supported at the top of the structure. The ice trenching machine removes ice in a circular path at a rate approximately equal to the rate of movement of the sheet ice toward the protected structure. Means are provided so that the boom can be moved entirely around the top of the structure so that a trench can be cut in the ice in any direction from the structure or to completely surround it.

3,766,738

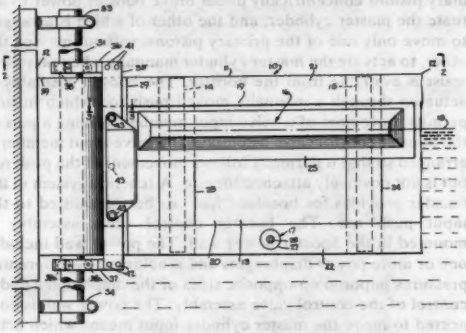
APPARATUS

George J. Gauch, South Bend, Ind., assignor to Uniroyal, Inc., New York, N.Y.

Filed Apr. 12, 1972, Ser. No. 243,375
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F 5 Claims

Apparatus for supporting a floating boom which forms a barrier on the surface of a liquid and for forming a seal between the end of the boom and a fixed structure, for example a dock. The apparatus allows lateral and vertical displacement of the boom with changes of wind, current, or tide while maintaining the seal. A deformable, resilient wall held in pres-

sure contact with the dock while supported on a vertically and laterally movable frame displaceable along a vertical pipe



spaced from the dock maintains the seal to prevent oil or other pollutants on the surface of the liquid from passing between the end of the boom and the dock.

3,766,739

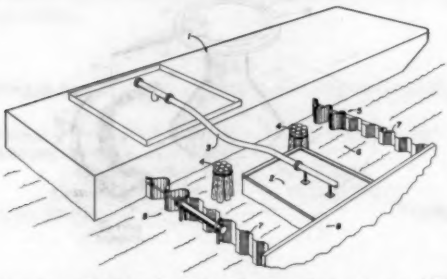
OIL SPILLAGE ENCLOSURE SYSTEM FOR MARINE USE

Glenn J. MacLean, 8901 N. E. 10 Court, Miami, Fla.

Filed May 30, 1972, Ser. No. 257,790

Int. Cl. E02b *3/22, 15/04*

U.S. Cl. 61—1 F **4 Claims**



A system for containing oil that might be spilled in handling at a marine oil transfer facility where the floating vessel and the mooring are sides of the containment, two closure devices are provided, one on each side of the hose handling area, between the vessel and the mooring to enclose an area of the water's surface to locally contain a depth of floating oil, wherein the closure sides are movable to compensate for motion of the floating vessel while it's moored.

3,766,740

METHOD AND MEANS FOR SHORTING THE SIDE WALLS OF TRENCHES TO PREVENT THEIR CAVING IN

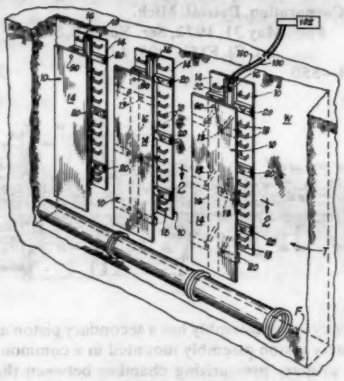
Donald R. Teegen, 116 Palm Drive, Barrington, Ill.

Filed June 16, 1972, Ser. No. 263,457

Int. Cl. E21d *5/12*

U.S. Cl. 61—41 A **10 Claims**

A method and assembly for protectively shoring the side walls of a trench. A pair of shoring members are held against opposite trench walls by vertically spaced jacks. A push plate assembly for installing the shoring members is securable to a pair of shoring members and mounts hydraulic rams for urging the shoring members into shoring engagement with the walls, following which the vertically spaced jacks are extended to maintain the shoring engagement. The rams are then retracted and the push plate assembly is removed from the trench to be



used to install a further pair of shoring members or to remove a previously installed pair of shoring members.

3,766,741

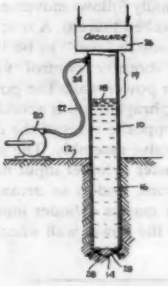
PILE DRIVING

Carl Daniel Hartzell, Oakland, N.J., assignor to Raymond International Inc., New York, N.Y.

Filed Mar. 9, 1972, Ser. No. 233,020

Int. Cl. E02d *7/26*

U.S. Cl. 61—53.5 **8 Claims**



Method and apparatus for driving a tubular pile into the ground characterized by filling and retaining a column of liquid in a substantially static condition in the pile, said column extending from substantially the bottom of the pile to a point located a predetermined distance below the top of the pile, while applying driving forces directly to the top of the pile.

3,766,742

SUBMARINE TETHERED WORKING UNIT AND METHOD OF MANIPULATING

Melvin Wilmer Smith, Edgewater, Md., and Andre George Brun, Paris, France, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

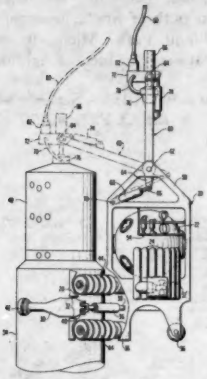
Filed Jan. 7, 1972, Ser. No. 216,037

Int. Cl. B63c *11/34*

U.S. Cl. 61—69 R **15 Claims**

A submarine tethered working unit is lowered into proximity with an underwater apparatus requiring servicing. The working unit is then maneuvered under its own power into embracing guided relationship with the pylon of the apparatus and the unit then crawls upwardly on the pylon under its own power and locks itself rigidly to the pylon in a position near a

removable module of the underwater apparatus. The working unit separates the module from the remainder of the apparatus



and carries it to the surface of the water after separation from the pylon.

3,766,743

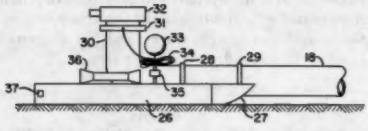
UNDERWATER PIPELINE INSTALLATION

Robert J. Brown, Rotterdam, Netherlands, assignor to Esso Production Research Company, Houston, Tex.

Filed May 12, 1972, Ser. No. 252,683

Int. Cl. F16l *1/00*

U.S. Cl. 61—72.3 **10 Claims**



A method for the installation of an underwater pipeline on the bottom of a body of water by towing a first elongated pipeline section having a trailing end mounted on a first underwater sled into position on the bottom of the body of water, pulling a second elongated pipeline section having a leading end mounted on a second underwater sled into position on the bottom of the body of water behind the first pipeline section and in longitudinal alignment therewith, moving the second sled into end-to-end engagement with the first sled, and thereafter connecting the leading end of the second pipeline section to the trailing end of the first pipeline section.

3,766,744

CUBE ICE MAKING MACHINE AND METHOD

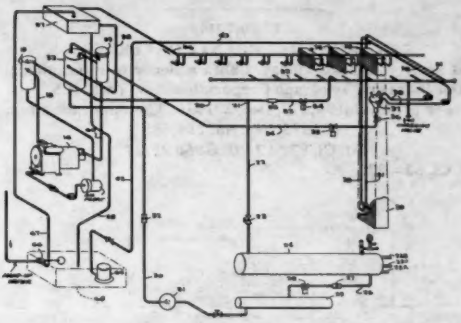
William F. Morris, Jr., Raleigh, N.C.

Filed Nov. 2, 1972, Ser. No. 303,037

Int. Cl. F25d *2/06*

U.S. Cl. 62—73 **28 Claims**

Automatic ice making apparatus for making cube ice, including a plurality of upright evaporators having opposite ice-forming surfaces defining plural cells for molding cube ice, water headers for discharging water downwardly onto the surfaces during the freezing cycle, and a compressor and condenser-receiver circuit including an auxiliary receiver circuit including an auxiliary receiver for supplying liquid refrigerant through an expansion valve to the evaporators during the freezing cycle. A conduit between the condenser-receiver and the auxiliary receiver is valved closed about a minute before the end of the freezing cycle to accumulate an overcharge of liquid refrigerant in the condenser-receiver to be converted to flash gas and transferred to the evaporators at the beginning of the harvesting cycle to aid defrost. Return of suction gas having enough wetness to absorb the heat out of the compressor



walls during defrost is achieved, and make-up water to a sump is cooled by returning suction gas during the freezing cycle.

3,766,745

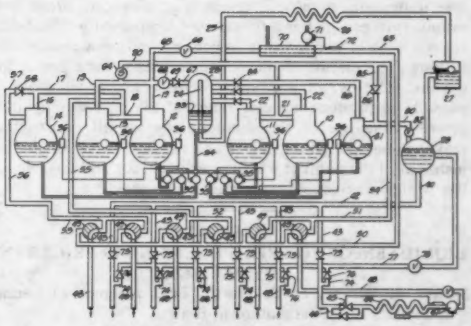
REFRIGERATION SYSTEM WITH PLURAL EVAPORATOR MEANS

Lester K. Quick, 45 N. Main St., Geln Ellyn, Ill.

Continuation-in-part of Ser. No. 19,801, March 16, 1970, Pat. No. 3,645,109. This application Oct. 4, 1971, Ser. No. 186,277

Int. Cl. F25b *41/00*

U.S. Cl. 62—196 **15 Claims**



A refrigeration system particularly adapted for supermarkets and the like employing a multiplicity of refrigerated fixtures or storage rooms operating at varying load requirements wherein centrally located compressors operate all of the evaporators which may include evaporators functioning at different temperature levels from approximately freezing to substantially below freezing. The various embodiments of the refrigeration system employ a separate compressor operating at a relatively high suction pressure which produces an intermediate refrigerant evaporation temperature far below the temperature of the condensed refrigerant in the main refrigeration system and approaching the temperatures of the evaporators of the system. In each embodiment the relatively high suction pressure and intermediate temperature developed by the separate compressor is employed for reducing the temperature of the condensed refrigerant of the main refrigeration system to that intermediate temperature before supplying same to the evaporators of the refrigerated fixtures with some of the embodiments employing direct communication between the separate compressor suction and the supply of refrigerant and others employing indirect communication by heat exchanger means. The separate compressor operates

at a very efficient level and thereby increases the overall efficiency and the operational characteristics of the refrigeration system.

3,766,746

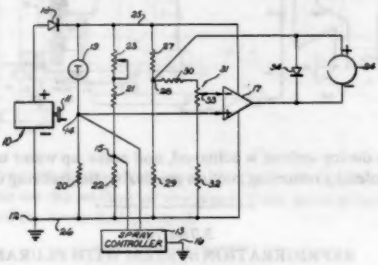
VOLTAGE TO CURRENT CONVERTER

Said Sapir, Westlake Village, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 94,277, Dec. 2, 1970. This application Jan. 10, 1972, Ser. No. 216,688

Int. Cl. F25d *3/10*; G05d *23/24*

U.S. Cl. 62—223 **5 Claims**



A voltage to current converter having an amplifier wherein any change of the output current of the amplifier is directly proportional to any change of its input voltage and independent of its load resistance so long as the amplifier is operating within its capabilities. The converter may be used in a wide variety of applications including, but not limited to, temperature indication. A resistor bridge is employed to produce an output voltage which is a function of temperature. The bridge is used both in temperature indication and temperature controlling. The circuit of the converter needs little power and current. The use of a unique circuit construction makes it possible to produce a meter range of the precise magnitude desired. The use of the same unique circuit construction makes possible high sensitivity and the determination and adjustment of the point at which most accuracy and linearity exists. Meter overvoltage protection is also provided.

3,766,747

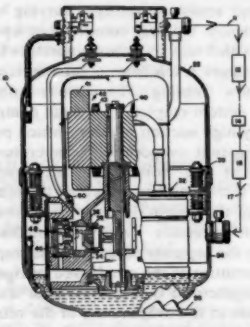
LIQUID SENSOR FOR RECIPROCATING REFRIGERANT COMPRESSOR

Sidney A. Parker, Forth Worth, Tex., assignor to Lennox Industries Inc., Marshalltown, Iowa

Filed Jan. 6, 1972, Ser. No. 215,752

Int. Cl. F25b *1/00*

U.S. Cl. 62—226 **5 Claims**



Method and means for preventing operation of a reciprocating refrigerant compressor in the event that there is liquid at the inlet to the valve mechanism in such compressor.

3,766,748

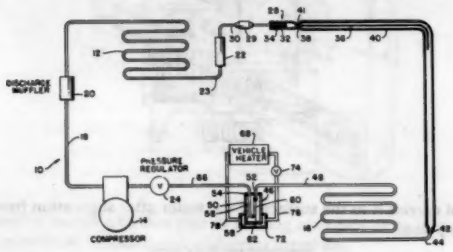
VEHICLE AIR CONDITIONING SYSTEM WITH SUCTION ACCUMULATOR

Edward W. Bottum, Brighton, and Richard C. Kozinski, Highland Park, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich., by said Kozinski, and Refrigeration Research Inc., Brighton, Mich., by said Bottum

Filed July 11, 1969, Ser. No. 841,032

Int. Cl. F25b *43/00*

U.S. Cl. 62—243 **1 Claim**



The vehicle air conditioning system comprises the usual compressor, evaporator and condenser connected together in operative relationship. Capillary tube refrigerant expansion means are provided between the condenser and evaporator. A suction accumulator is provided between the evaporator and compressor so that the system will be effective when the compressor operates at variable speeds, the condenser is subjected to variable ambient temperatures and the evaporator is subjected to a variable load.

3,766,749

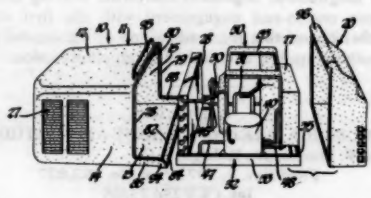
WINDOW AIR CONDITIONER ASSEMBLY

J. D. Livesay, Tipp City, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 15, 1972, Ser. No. 289,660

Int. Cl. F25d *23/12*

U.S. Cl. 62—262 **5 Claims**



A window air conditioning unit having a structural frame member supporting refrigeration and air handling sub-assemblies which may be slidably placed in the open front end of a box-shaped molded outer casing by folding down an integral end flap, hingedly connected to the protruding transverse edge of the casing bottom wall. The flap has corner gussets in the form of flexible webs integral with bottom wall side flanges such that upon the upward folding movement of the front flap the webs bulge inwardly to form a fluid-tight condensate sump in the bottom portion of the casing. The air handling system is enclosed in a housing formed from a molded one-piece blank having integrally hinged panels.

3,766,750

PREFABRICATED MODULE AIR CONDITIONER

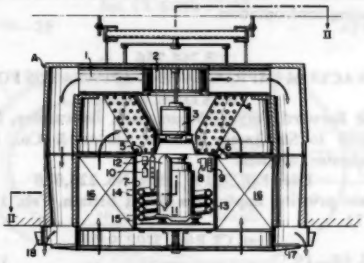
Toshiaki Aoh, Tokyo, and Kiyoshi Yanagimachi, Oisomachi, both of Japan, assignors to Takasago Thermal Engineering Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1971, Ser. No. 213,869

Claims priority, application Japan, Dec. 31, 1970, 45/136666; Dec. 31, 1970, 45/136667; Dec. 31, 1970, 45/136668; Dec. 31, 1970, 45/136670; Dec. 31, 1970, 45/136671; Dec. 31, 1970, 45/136672; Dec. 31, 1970, 45/136674; Dec. 31, 1970, 45/136675

Int. Cl. F25d *23/12*

U.S. Cl. 62—259 14 Claims



A prefabricated module air conditioner suitable for installation on a ceiling or for hanging therefrom, characterized by its having a reformed structure by which the formation of dew can be prevented while installation, maintenance and repairing can be made at ease through the prefabricated opening of the ceiling.

3,766,751

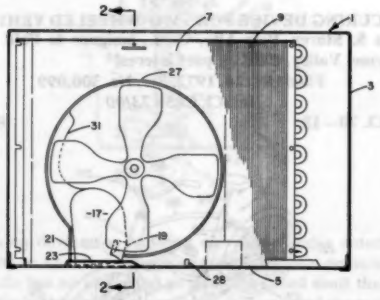
AIR CONDITIONING UNIT WITH CONDENSATE DISPOSAL

David A. Ball, Manlius, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 2, 1972, Ser. No. 249,644

Int. Cl. F25b *47/00*

U.S. Cl. 62—280 8 Claims



An air conditioning apparatus employing an aspirating device to lift condensate from the base pan of the unit and disperse the water in fine droplets against the condenser coil through the interaction of the condenser fan and a baffle arrangement of a predetermined design.

3,766,752

REFRIGERATION MACHINE CIRCUIT WITH FUSION STORAGE

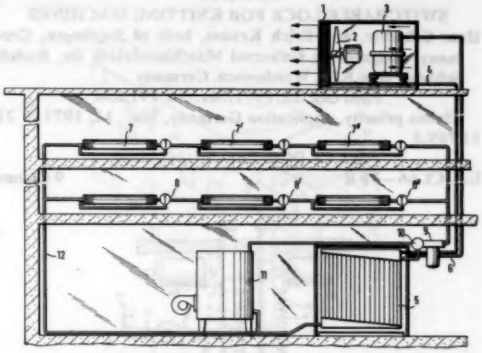
Nikolaus Laing, Hofener Weg 35 bis 37, Aldingen Bei Stuttgart, Germany

Filed May 17, 1972, Ser. No. 254,136

Claims priority, application Switzerland, May 21, 1971, 7509/71

Int. Cl. F25d *17/02*

U.S. Cl. 62—435 9 Claims



A refrigeration machine circuit, comprising a storage mass which gives off its heat of crystallisation at approximately 4°C where the mass is in heat conducting communication with an evaporator of the machine and where the mass has water from a cold water circuit playing on it.

3,766,753

CONTROL APPARATUS FOR RESETTING PATTERN DRUMS

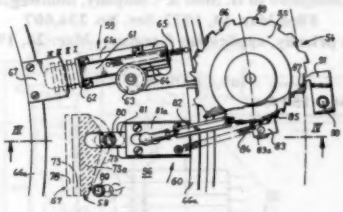
Hans Schnurrer, Ebingen, Germany, assignor to Mayer & Cie, Maschinenfabrik, Tailfingen/Wurtt., Germany

Filed Dec. 14, 1971, Ser. No. 207,888

Claims priority, application Germany, Dec. 17, 1970, P 20 62 148.1

Int. Cl. D04b *15/66, 15/74*

U.S. Cl. 66—50 B 13 Claims



A pattern control device and a plurality of actuator devices are mounted on the needle cylinder of a circular knitting machine and successively pass a stationary setting device which is moved to different setting positions under the control of a pattern chain cylinder. In different setting positions, the pattern control device and the actuator devices selectively operative for shifting pattern drums and a counter wheel. The pattern drums have a predetermined number of rows of pins to which alternating recesses and projections of the counter wheel correspond, except that one projection is replaced by a special deep recess which represents the initial position of the counter wheel and of the pattern drums. When a pattern has been completed, the setting means render all actuating devices operative to shift the pattern drums with the counter wheel in double steps to the initial position until the deep

recess is sensed by sensing means which place the setting device in its initial positions in which the pattern control device and all actuator devices are rendered inoperative. In order to obtain the resetting of the pattern drums during one revolution of the needle cylinder, the number of actuating devices is an integer fraction of the number of rows of pins on the pattern drums, and the actuator devices shift the pattern drums a number of angular steps which is equal to the denominator of the fraction, for example, two steps at a time.

3,766,754

SWITCHABLE LOCK FOR KNITTING MACHINES

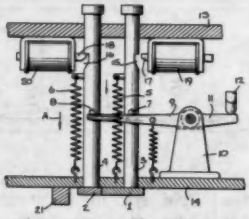
Hans Schieber, and Erich Krause, both of Bopfingen, Germany, assignors to Universal Maschinenfabrik Dr. Rudolf Schieber G.m.b.H., Westhausen, Germany

Filed Oct. 22, 1971, Ser. No. 191,638

Claims priority, application Germany, Mar. 11, 1971, P 21 11 789.5

Int. Cl. D04b *7/00, 15/36, 35/00*

U.S. Cl. 66—78 R **9 Claims**



Cams in knitting machines are movable between operative and inoperative positions and are biased as by springs toward one position and are held in the other position against the spring bias by a detent engaging latching bolt controlled by an electromagnet and movable along a path perpendicular to the direction of cam movement.

3,766,755

METHOD AND ARRANGEMENT FOR TRANSMITTING CONTROL SIGNALS TO THE CARRIAGE OF A FLAT KNITTING MACHINE

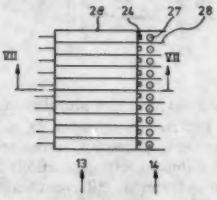
Wilhelm Hadam, and Jurgen Ploppa, both of Reutlingen, Germany, assignors to H. Stoll & Company, Stollweg, Germany

Filed Mar. 14, 1972, Ser. No. 234,607

Claims priority, application Germany, Mar. 24, 1971, P 21 14 127.5

Int. Cl. D04b *15/66*

U.S. Cl. 66—154 A **6 Claims**



Control signals for controlling the movement and setting of the carriage of a flat knitting machine are transmitted from a stationary program carrier to the carriage at predetermined intervals only by means of signal transmission arrangements which are operable only at predetermined intervals, the signals being transmitted preferably through a plurality of channels, and the program carrier preferably being centrally located so as to control a plurality of machines. The signals may be transmitted from stationary signal emitters in the form of contact bars disposed in the direction of travel of the carriage to contact brushes or pins which are carried by the carriage to slide over the stationary contact bars. Alternatively, signal transmission may be transmitted optically from stationary light strips to photo-electric converters carried by the carriage, or by stationary magnetic field inductors and reed contacts provided on the carriage. The emitters are so arranged that signal transmission occurs over only a relatively short length of the total carriage stroke, and where the transmission occurs between the ends of the strokes the signals can be stored on the carriage until the end of the stroke. A coordinating arrangement can limit the signal transmission period to less than the total period of confrontation between the emitters and receivers during the carriage stroke, so as to initiate transmission after confrontation and terminate transmission during confrontation.

3,766,756

VACUUM IMPREGNATING APPARATUS FOR TREATING WEBS

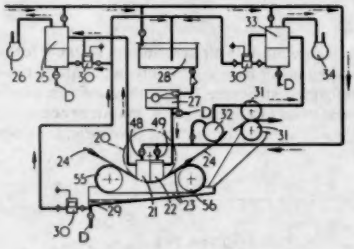
Gervase Bernard Farrar, Manchester, Lancashire, England, assignor to Sir James Farmer Norton & Co., Limited, Manchester, England

Filed Feb. 7, 1972, Ser. No. 224,076

Claims priority, application Great Britain, Feb. 10, 1971, 4,350/71

Int. Cl. B05c *5/02, 9/08*

U.S. Cl. 68—19.1 **17 Claims**



A vacuum impregnating apparatus in which cloth is passed firstly past a vacuum unit which removes air from the cloth interstices. The evacuated cloth immediately being presented to an impregnation unit which delivers impregnating liquid into the evacuated cloth. The impregnated cloth is then subjected either to the action of a squeezing nip or suction unit to remove excess impregnating liquid.

3,766,757

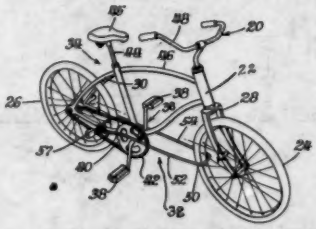
SECURING DEVICE FOR TWO-WHEELED VEHICLES

James S. Storey, Palo Alto, Calif., assignor to Phill Berger, Carmel Valley, Calif., a part interest

Filed Oct. 24, 1972, Ser. No. 300,099

Int. Cl. E05b *73/00*

U.S. Cl. 70—18 **8 Claims**



A locking device for bicycles formed of hardened steel rod and shaped so as to engage the two wheels at the sections of the rims of the wheels which are closest to one another and

which also encircles the sprocket drive mechanism. The free ends of the elongated, generally rectangularly shaped shackle have integrally formed loops or hasps so that the shackle can be locked with a padlock. The hasps are welded closed so that they cannot easily be opened with a pry-bar to free up the lock. When not in use to secure the wheels to the frame the shackle can be conveniently stored under the seat through the use of suitable clips mounted on the cross bar or along the rear fork or fender.

3,766,758

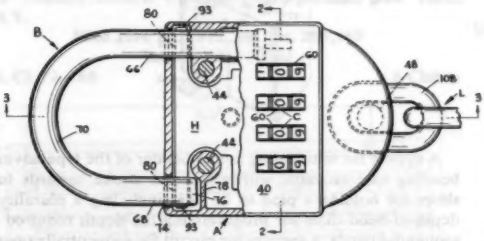
COMBINATION PADLOCK

Henry Heine, Vernon, and Rudolf Wingert, High Crest Lake, both of N.J., assignors to Presto Lock Company, Division of Walter Kidde & Company, Inc., Garfield, N.Y.

Filed Aug. 24, 1972, Ser. No. 283,303

Int. Cl. E05b *37/02*

U.S. Cl. 70—25 **12 Claims**



A combination padlock of the multiple dial type is provided with a cam at the end of the long portion of the essential shackle for cooperation with the sleeves for the dials to enable setting or changing the combination. Also, the elements of the padlock are so related to one another that the device is suitable for heavy duty usage including the permanent connection thereto of a chain without increasing the size of the device to any appreciable degree.

3,766,759

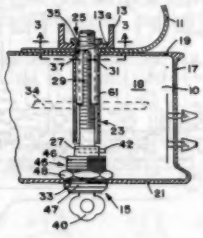
LOCKING DEVICE

Marcus M. Artner, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of Ser. No. 71,485, Sept. 11, 0170. This application Oct. 14, 1971, Ser. No. 189,363

Int. Cl. E05b *73/00*; F16b *41/00*

U.S. Cl. 70—58 **4 Claims**



A locking device for securing electronic audio entertainment units to an interior support member within an automobile vehicle has an elongated partially threaded shaft that extends entirely through the housing of said unit and the support member, and a threaded bushing means that receives the threaded portion of said shaft which extends through the support member. The shaft is lockable within said housing to prevent rotation of said shaft with respect to said bushing means without first unlocking said shaft from within said housing, and said bushing means has a portion which extends into said housing and is adapted to be secured against rotation with respect thereto whereby rotation of said bushing means with respect to said shaft is prevented.

3,766,760

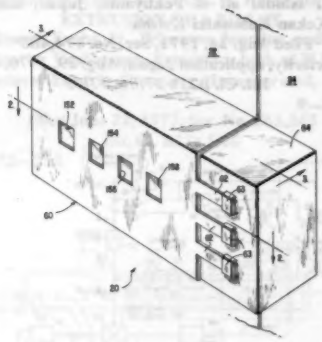
MULTIPLE WHEEL COMBINATION LOCK

John P. Mohrhauser, 804 Prospect St., Maplewood, N.J., and Richard W. Strazza, 3 Turner Ct., Princeton, N.J.

Filed June 2, 1972, Ser. No. 259,260

Int. Cl. E05b *37/02*

U.S. Cl. 70—314 **10 Claims**



A multiple wheel combination lock having springs mounted on a pivotable actuator plate to engage and rotate the wheels in a random fashion each time the lock is opened so that the correct combination is not in view. Each wheel has numbers, letters or other indicia on its circumference which form the basis of the combination. A movable cover member is provided to cover and protect the wheels when they are not in use and to engage and disengage receiving means to lock and unlock the device.

3,766,761

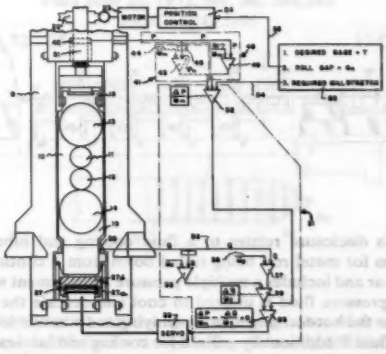
ROLLING MILL CONTROL

James Richard Adair, and Ronald Wesley Deems, both of Pittsburgh, Pa., assignors to Wean United, Inc., Pittsburgh, Pa.

Filed Oct. 7, 1971, Ser. No. 187,253

Int. Cl. B21b *37/12*

U.S. Cl. 72—8 **3 Claims**



This disclosure relates to a control for a rolling mill in which a signal representing the required stretch of the mill for a desired thickness of product and roll gap setting, which stretch is first employed to set the initial roll gap predicated on a predicted rolling pressure, is compared with a signal representing the actual stretch of the mill during rolling. A third signal is

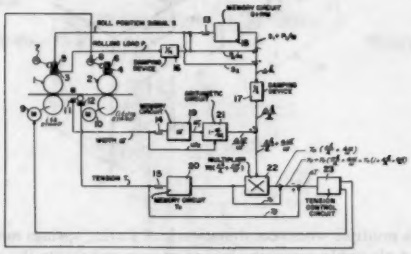
produced representing the difference between the first and second signals and which equal the amount which the product differs from the desired gage due to improper initial estimate of predicted rolling pressure employed to set the initial roll gap and, consequently, the required change that must be made to the roll gap to produce a product of the given thickness.

3,766,762

CONTROL METHOD OF TENSION IN ROLLING MILLS (2)

Seiji Fujii; Hiroshi Kuwamoto; Masamoto Kamata, and Masayuki Ishida, all of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha

Filed Aug. 24, 1971, Ser. No. 174,485
Claims priority, application Japan, Aug. 29, 1970, 45/75440
Int. Cl. B21b *37/06, 37/02*
U.S. Cl. 72—9 **9 Claims**



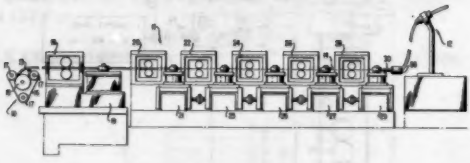
In a cold tandem mill of the endless type, the tension of the strip is maintained constant during the transitional period that the cross section of the strip undergoes a change in size as the thickness, the width or the finished thickness of the strip is being changed.

3,766,763

CONTINUOUS ROLLED ROD DIRECT COOLING METHOD AND APPARATUS

Daniel B. Cofer; Francis Marion Mitchell; George C. Ward, and Milan Kozak, all of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Jan. 13, 1971, Ser. No. 106,149
Int. Cl. B21b *37/10, 45/02*
U.S. Cl. 72—13 **6 Claims**



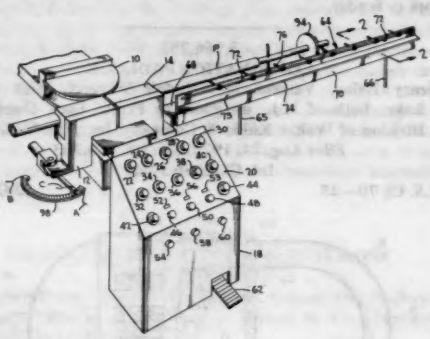
This disclosure relates to a fluid cooling and lubricating system for metal rod being rolled down from a continuously cast bar and includes a multiple pressure arrangement wherein high pressure fluid is utilized to cool and descale the rod as well as the hot-forming rolls by spraying and wherein low pressure fluid is additionally utilized for cooling and lubrication by flooding roll stand entrance and exit rod-guide housings. Direct and controlled spray cooling of the hot-formed rod is obtained by wide-angled nozzles having solenoid-operated valves responsive to the exit temperature of the rod which is monitored by a photopyrometer whereby the volume of coolant is controlled to obtain a uniform finishing temperature of the rod.

3,766,764

AUTOMATIC PIPE BENDER

Bernard D. Ross, 2710 Emmick St., Toledo, and Jose P. Limon, 209 Beech St., Rossford, both of Ohio, assignor to said Ross by said Limon

Filed Oct. 6, 1971, Ser. No. 187,099
Int. Cl. B21j *7/26*
U.S. Cl. 72—22 **8 Claims**



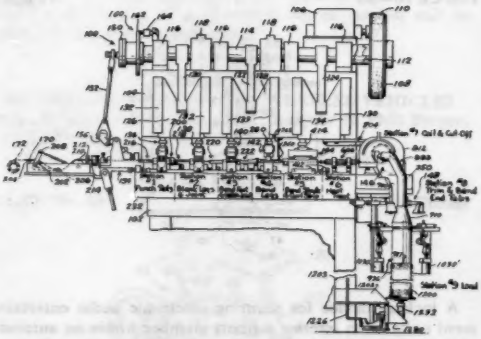
A system for automating a pipe bender of the type having a bending ram movable with a forward stroke towards back shoes for holding a pipe to be bent including a plurality of depth-of-bend dials for programming the depth required for sequential bends, a sequencing circuit for sequentially operating the depth-of-bend dials, a detector for determining the position of the bending ram during the forward stroke and a control circuit for comparing the position of the bending ram with the setting of the depth-of-bend dials in order to control the bending ram to stop the forward stroke after a desired bend has been formed in the pipe.

3,766,765

MACHINE FOR FORMING PISTON RING SPACER-EXPANDERS FROM STRIP STOCK

Roy E. Overway, Grand Haven, Mich., assignor to Sealed Power Corporation, Muskegon, Mich.

Division of Ser. No. 39,498, May 21, 1970, Pat. No. 3,646,797. This application Nov. 5, 9171, Ser. No. 196,240
Int. Cl. B21b *9/00*
U.S. Cl. 72—38 **27 Claims**



A machine for making spacer-expanders for piston oil rings of the type described in U.S. Pat. No. 3,477,732. The machine comprises a punch press having a plurality of stations through which strip stock is fed progressively in accurately predetermined increments, the strip stock being worked between dies at each station to transform the strip stock into completed rings. The press includes one or more punching stations where the strip stock is pierced and blanked, one or more forming

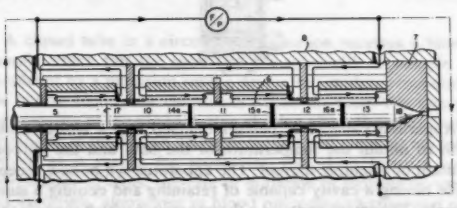
stations where the pierced and notched strip is bent to form the spring legs of the spacer-expander and then curled into a channel-shaped cross-section, a coiling station where the channel-shaped stock is fashioned into a coil, and a cut-off station where each coil is sheared from the strip to form the semi-finished ring. The press also includes a special transfer apparatus for transferring the semi-finished ring to a final work station wherein the end joints are trimmed and formed to final configuration, after which the finished rings are loaded automatically in stacked relation on a cylindrical mandril.

3,766,766

METHOD OF AND MEANS FOR COMMENCING A DEFORMING OPERATION, E.G., HYDROSTATIC EXTRUSION OF A BILLET

Francis Joseph Fuchs, Jr., Princeton Junction, and Peruvemba Swaminatha Venkatesan, Princeton, both of N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed June 22, 1972, Ser. No. 265,165
Int. Cl. B21c *23/04*
U.S. Cl. 72—60 **6 Claims**



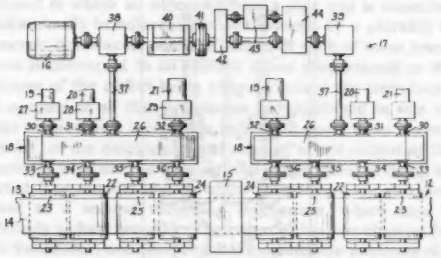
A plurality of lengths of material of varying hardness is arranged in order of hardness and the lengths are pressure welded to each other at planar joints to form a composite billet having a forward end and a rearward end, the hardness of the composite billet increasing from the forward end toward the rear end thereof and not exceeding the hardness of the main billet. To abate or eliminate abrupt changes in hardness, the cross section of the composite billet, initially larger than that of the main billet, is reduced to the same cross section as the main billet to spread the pressure welded joints. The rearward end of the reduced composite billet is pressure welded to the forward end of the main billet and serves as a billet nose which is deformed prior to deformation of the main billet.

3,766,767

MULTIPLE ROLL BRIDLE SYSTEM

Telesfore Rastelli, Cheshire, Conn., assignor to Textron Inc., Providence, R.I.

Filed Feb. 26, 1971, Ser. No. 119,163
Int. Cl. B21b *35/00*
U.S. Cl. 72—249 **16 Claims**



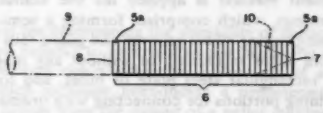
The speed of the individual rolls in multiple roll bridle systems is made adjustable and independent of roll diameter for maximum alteration of strip passing over the rolls, by providing first, plural, independent drive means for a plurality of corresponding rolls in each of a set of entry rolls and a set of exit rolls, and second drive means providing common power input to a plurality of rolls in each said sets. The second drive means is adapted to provide, through a gear train including infinitely variable speed transmission means and differential transmission means, dual power takeoffs to corresponding dual planetary gear systems.

3,766,768

METHOD OF AND MEANS FOR COMMENCING A DEFORMING OPERATION, E. G. HYDROSTATIC EXTRUSION OF A BILLET

Francis Joseph Fuchs, Jr., Princeton Junction, and Peruvemba Swaminatha Venkatesan, Princeton, both of N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed June 22, 1972, Ser. No. 265,245
Int. Cl. B21c *5/00*
U.S. Cl. 72—256 **26 Claims**



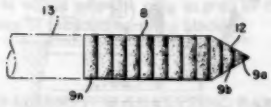
The forward end of the billet to be deformed, e.g., hydrostatically extruded, is provided with a billet nose prepared by securing in order of hardness a plurality of metallic wafers of varying hardnesses to provide the billet nose with a hardness gradient increasing from the forward end thereof toward the rearward end thereof. The wafers are secured to each other by brazing, diffusion bonding, explosive bonding, friction welding or pressure welding techniques.

3,766,769

METHOD OF AND MEANS FOR COMMENCING A DEFORMING OPERATION, E. G., HYDROSTATIC EXTRUSION OF A BILLET

Francis Joseph Fuchs, Jr., Princeton Junction, and Peruvemba Swaminatha Venkatesan, Princeton, both of N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed June 22, 1972, Ser. No. 266,143
Int. Cl. B21c *5/00*
U.S. Cl. 72—256 **13 Claims**



A billet nose is prepared by superposing layers of sinterable powders in a billet nose mold, the layers having different post-sintering hardness characteristics and being arranged in order of said post-sintering hardness characteristics, compacting the superposed layers and then cofiring the mass of compacted layers to produce a sintered billet nose having a hardness gradient increasing from the forward end to the rearward end thereof. The rearward end of the sintered billet nose is mounted to the forward end of the main billet and deformation thereof is commenced.

3,766,770

METHOD OF MANUFACTURING FORGED CROSSING

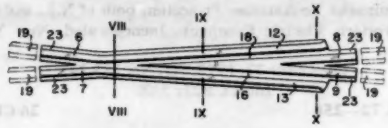
Yoshiaki Sato, Tokyo; Makoto Kagami, Yachiyo; Shigeroku Motaki, Tokyo, and Masakazu Mitsukawa, Miki, all of Japan, assignors to Japanese National Railway and Kabushiki Kaisha Mitsukawa Tekkosho Miki-shi, Hyogo-ken, Japan

Filed Mar. 2, 1971, Ser. No. 120,197

Claims priority, application Japan, Apr. 2, 1970, 45/28091; Apr. 2, 1970, 45/28092

Int. Cl. B21d *28/00*; E01b *7/10*

U.S. Cl. 72—340 3 Claims



The present method is applied for the manufacture of forged crossings, which comprises forming a semi-manufactured crossing having wheel grooves and guard rails by stamp-forging, with some machining or without any machining, a deformed, rectangular steel plate or billet, and forging and forming joining portions for connecting with ordinary rails at the ends of each of the rail portions on both ends of such semi-manufactured crossing.

3,766,771

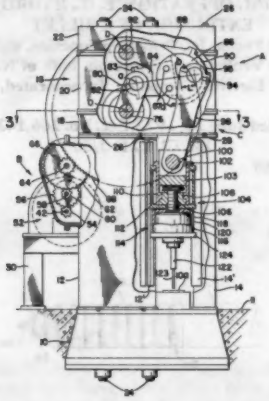
PRESS AND DRIVE MECHANISM THEREFOR

Sheldon A. Spachner, Woodlyn, Pa., and Prakash D. Desai, Raleigh, N.C., assignors to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Continuation-in-part of Ser. No. 790,800, Jan. 13, 1969, abandoned. This application June 24, 1970, Ser. No. 49,495

Int. Cl. B21j *9/18*

U.S. Cl. 72—450 24 Claims



The disclosure is directed to a long stroke extrusion press provided with an improved mechanical drive arrangement. The drive arrangement includes a linkage having a first drive link pivotally connected between the press slide and a second link which is connected to a driven crank. A third link is pivotally connected between the press frame and the second link. The various links are arranged to provide desirable kinematic and dynamic characteristics by developing a selected coupler curve at the pivot point between the first and second links.

3,766,772

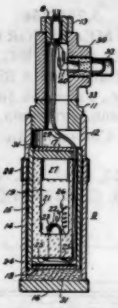
APPARATUS FOR CONTROLLING METALLURGICAL PROCESSES

David W. Kern, Slatedale, and Philip D. Stelts, Center Valley, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 661,616, Aug. 18, 1967, Pat. No. 3,574,598. This application Dec. 2, 1970, Ser. No. 94,271

Int. Cl. G01n *25/06*; G01k *13/12*

U.S. Cl. 73—17 R 1 Claim



Apparatus capable of being immersed into a molten steel bath to obtain the temperature of the bath and the carbon content of a sample thereof. The apparatus is a hollow receptacle having a cavity capable of retaining and cooling a steel sample. The cavity contains a thermocouple which records the cooling characteristics of the steel sample and especially the liquidus arrest temperature corresponding to a phase transformation of the sample. The liquidus arrest temperature is used as a measure of the carbon content of the steel bath. A second thermocouple may be used to record the bath temperature directly. Also described are processes for controlling various steelmaking and refining processes, especially the basic oxygen steelmaking process.

3,766,773

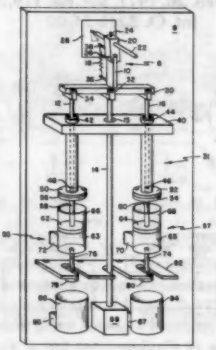
PORTABLE TURBULENT FLOW COMPARISON RHEOMETER

John C. Limpert, Baltimore, Md., assignor to the United States of America as represented by the Secretary of the Navy

Filed Nov. 24, 1971, Ser. No. 201,648

Int. Cl. G01n *11/04*

U.S. Cl. 73—56 9 Claims



The invention is a portable turbulent flow comparison rheometer for evaluation of fluids exhibiting drag-reducing

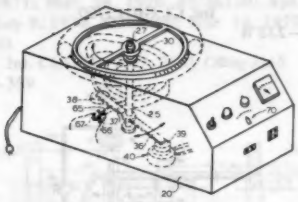
properties. The device is capable of directly measuring and recording differences in flow rates produced by identical pressures between two fluids.

3,766,774

APPARATUS AND METHOD FOR MEASURING BLOOD CHARACTERISTICS

Howard G. Clark, Durham, N.C.

Filed Feb. 18, 1972, Ser. No. 227,437
Int. Cl. G01n *11/04*
U.S. Cl. 73—64.1 17 Claims



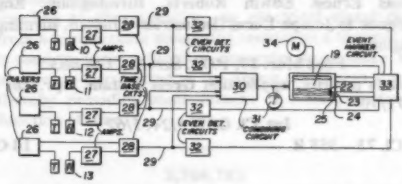
A closed tube in a circular configuration receives a blood sample which fills the tube and the tube with its sample is oscillated by a precision timing device to simulate reproducible in vivo blood flow conditions within the tube. The changing viscosity of the blood during clotting alters the period and amplitude of oscillation whose detection and measure are employed as a means for measuring the characteristics and morphology of clots, the rate of initiation of clotting by various materials, alterations in blood preceding clotting and related blood characteristics.

3,766,775

ULTRASONIC INSPECTION SYSTEM

Walter A. Gunkel, 6515 Moss Oak, San Antonio, Tex.

Filed Feb. 22, 1971, Ser. No. 117,676
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.8 S 9 Claims



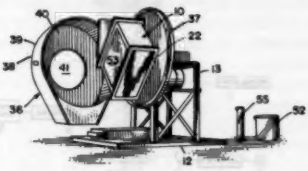
A system for the ultrasonic inspection of metal objects is disclosed in which an object such as a pipe end is inspected simultaneously in adjacent parallel sections by a plurality of ultrasonic transducers, and the output of each of these transducers is converted to an electric signal proportional to the thickness of the object being tested adjacent the transducer. The outputs of all the transducers are combined in one instance to provide a recordable indication, such as on a chart recorder, of the electrical signal relating to the output of the transducer adjacent the thinnest wall of the member being inspected. The outputs of each of the transducers are also conducted to a second recording mechanism, which also is preferably a chart recorder. The recorder has one channel for each transducer, and each channel indicates the presence of a discontinuity of a predetermined magnitude. Means are provided for correlating the information concerning the wall thickness of the object being inspected and the information concerning the presence of a discontinuity of any one channel to provide information concerning location, depth and size of a flaw. The whole system may be provided on a portable stand for insertion into a pipe end to be inspected and a portable console to facilitate the inspection of large diameter pipe.

3,766,776

METHOD FOR DETERMINING THE DURABILITY OF PELLETS AND APPARATUS THEREFOR

Merl A. Williams, Craigville, Ind., assignor to Central Soya Company, Fort Wayne, Ind.

Filed Mar. 31, 1972, Ser. No. 240,179
Int. Cl. G01n *3/00*
U.S. Cl. 73—78 7 Claims



A method for determining the durability of pellets (such as animal feed pellets) to ascertain at the beginning of a large scale production run whether the pellets are of acceptable quality: which includes: introducing a predetermined sized sample of pellets from the output of a pellet making machine into a screened-walled container, cooling the pellets followed by limited agiation for separating fine particles after which the container is tumbled to collect fine particles and finally comparing the thus collected fine particles against a predetermined standard.

3,766,777

RECEPTACLE TESTING DEVICE

Denes Roveti, 15 Lincoln Center Pk., Annapolis, Md.

Filed May 4, 1971, Ser. No. 140,221
Int. Cl. G01n *19/02*; G01r *31/04*
U.S. Cl. 73—141 AB 3 Claims

The device of this invention comprises a test instrument for determining the electromechanical integrity of all the contacts of electric receptacles. The device includes male members adapted to be inserted into the normal openings of two or three terminal electrical receptacles and which, when withdrawn, indicate the force with which the contact members of the receptacle would grip the plug as well as the electrical contact resistance of the load carrying blades.

3,766,778

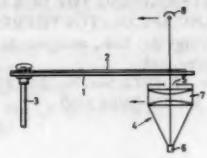
METHOD AND MEANS FOR ANALYZING BARRELS AND AMMUNITION ON THE BASIS OF BUCKSHOT SCATTER

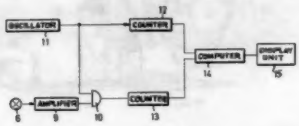
Ernst Hendrichsen, Heide 21, 5841 Holzen, Germany

Filed Nov. 21, 1972, Ser. No. 308,432
Claims priority, application Germany, Nov. 22, 1971, P 21 57 795.7; Sept. 14, 1972, P 22 45 013.1
Int. Cl. G01l *5/14*
U.S. Cl. 73—167 17 Claims

The number and distribution of hits by buckshot pellets on a test area are analyzed by moving the test area relative to a sensor that covers a zone smaller than the area and approximates the size of a typical target such as a clay pigeon. The sensor produces a test signal each time it senses a penetration of the

test area due to a hit. An oscillator produces timing signals. A counter counts the number of coincidences of timing signals with test signals. A divider compares the total number of timing signals with the number of coincidences for predetermined time periods. Each time period represents a region of the test





area covered by the sensor. According to one embodiment, the sensor covers successive annular regions of the test area. According to another embodiment, the sensor travels along parallel lines and then along other parallel lines transverse to the first parallel lines.

3,766,779

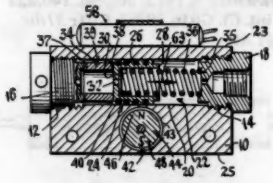
HYDRAULIC RESPONSIVE DEVICE

Leslie J. Hoffman, c/o Orange Research Inc., 821 Derby-Milford Rd., Orange, Conn.

Filed Dec. 29, 1971, Ser. No. 213,397

Int. Cl. G01p *5/02*

U.S. Cl. 73—228 **4 Claims**



A hydraulic flow indicating instrument for connection in a line carrying fluid. A non-magnetic, sealed pressure casing is provided having a chamber formed by a cylinder, communicating with an entry port and an exit port. A piston having an orifice through which the fluid under pressure can flow, is movable in the cylinder, which also carries an annular permanent magnet placed end-to-end with the piston. The piston and magnet are biased by a spring to an upstream position considering the flow of the fluid entering through the entry port. A slave member having a slave magnet under the influence of the magnetic field of the annular permanent magnet is rotatably mounted on the casing externally of the chamber. As the position of the piston and annular magnet changes due to variations in pressure or fluid flow, the slave member and slave magnet are turnably adjusted in response thereto. The slave member can have an indicating pointer movable over a dial mounted on the casing, to disclose the rotary position of the slave member. The movement of the slave member in response to changes in the position of the piston and annular magnet is also employed to actuate miniature snap-action switches which can be used for energizing warning lights and activating circuitry to control pumps and other devices. The sealed casing has a pair of expansive opposite exterior surfaces to one of which the back of the dial is secured, said casing constituting a protection and firm support for virtually all of the rear of the dial whereby the latter is not likely to be damaged under adverse conditions of use.

3,766,780

TURBINE FLOWMETER WITH BEARING-LUBRICATION DEVICE

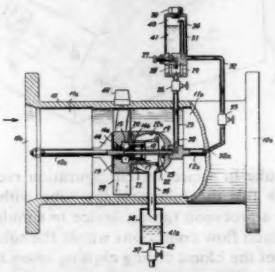
Kensuke Aizawa, Yokohama, and Shigeo Sugiyama, Fujisawa, both of Japan, assignors to Tokico Ltd., Kawasaki, Kanagawa, Japan

Filed Mar. 15, 1972, Ser. No. 234,884

Claims priority, application Japan, Mar. 20, 1971, 46/16060

Int. Cl. G01f *1/00*

U.S. Cl. 73—231 R **5 Claims**



A turbine flowmeter has a lubrication device for supplying lubricating oil from outside of the main body of the flowmeter to bearings rotatably supporting a turbine rotor within the body. The lubricating device has an oil reservoir provided outside of the body and passage means for conducting lubricating oil from the oil reservoir, through a fixed shaft supporting the bearings, and thence to the bearings. The flowmeter further has passage means for transmitting gas pressure within the flowmeter body to a space within the oil reservoir.

3,766,781

APPARATUS FOR TEMPERATURE MEASUREMENT

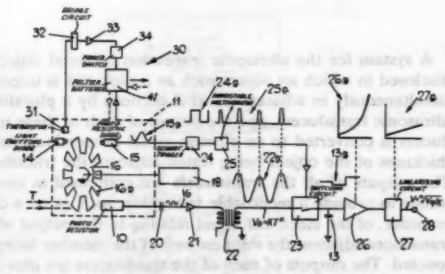
Thomas Ernest Edwin Roberts, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 29, 1971, Ser. No. 128,863

Claims priority, application Great Britain, Apr. 28, 1970, 20,371/70

Int. Cl. G01j *5/24, 5/62*

U.S. Cl. 73—355 R **14 Claims**



An apparatus for measuring the temperature of an infra-red source includes provision for modulating the output of an infra-red sensitive device and for generating a signal in synchronism with peaks of the modulated output, said signal being used to control a switch so as to provide a d.c. signal porportional to the levels of said peaks. A circuit, which generates a function which is the inverse of the relationship

between the source temperature and the d.c. signal, provides an output for the apparatus which has a linear relationship with the temperature.

3,766,782

TEMPERATURE MEASURING APPARATUS

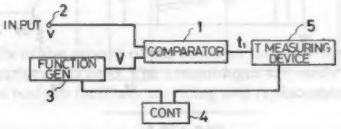
Naonobu Shimomura, No. 13-8, Sakuragaoka-cho, Shibuya-ku, Tokyo, Japan

Filed Jan. 11, 1971, Ser. No. 105,232

Claims priority, application Japan, Jan. 19, 1970, 45/4955; Feb. 28, 1970, 45/17263; Mar. 17, 1970, 45/22406; Mar. 22, 1970, 45/23871; Mar. 28, 1970, 45/26210; Apr. 19, 1970, 45/33289; July 9, 1970, 45/60190; Mar. 10, 1970, 45/23022 (utility model)

Int. Cl. G01k *7/02, 7/20;* **G06g** *7/18*

U.S. Cl. 73—359 **10 Claims**



Where a value of a variable y which is a function of an observable variable v, given in the form $y=f(v)$, is to be determined, an inverse function $v=g(y)$ is produced, and the variable y is replaced by a time variable to form a function $V=g(ct)$, where c is a constant. To the input of a comparator are applied the variable v and the function V from a function generator which is started by a controller at $t=0$. At the same time, a time measuring device is operated and subsequently stopped by a coincidence pulse produced by the comparator at $t=t_1$. Assuring that the variables v and V have the respective values of v_1 and V_1, it follows that $v_1=V_1$, $V_1=g(ct_1)$, and as a result, the value of the variable y at the time t_1, y_1, is given by the following relationship:

$$y_1=f(v_1)=f(V_1)=f(\,g(ct_1)\,)=ct_1$$

as long as the both functions $f(v)$ and $g(y)$ remain single-valued functions.

According to the invention, an electrical signal derived from a temperature measuring resistor or a thermocouple is used to cause a function generator to produce V in a manner to correspond to the above expression $v=g(y)$, thereby providing measurement of a temperature as a function of time.

3,766,783

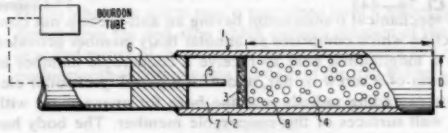
GAS BULB FOR A GAS-FILLED DIAL THERMOMETER

John Tortoso, 405 Beach 9th St., Far Rockaway, N.Y.

Filed Apr. 21, 1971, Ser. No. 135,959

Int. Cl. G01k *5/36*

U.S. Cl. 73—368.2 **13 Claims**



A gas bulb for a gas-filled thermometer, the bulb containing activated coconut charcoal, and having dimensions such that the internal volume is about 0.15 cubic inches, operating on the principal of adsorption and emission of an agent of the activated coconut charcoal, thus indicating an appropriate change in temperature depending upon the amount of agent emitted or absorbed by the activated coconut charcoal.

3,766,784

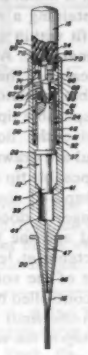
PIPETTOR STROKE CONTROL MECHANISM

Clarence L. Walker, Webster Grove, Mo., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed June 16, 1971, Ser. No. 153,692

Int. Cl. B01l *3/02;* **G01n** *1/14*

U.S. Cl. 73—425.4 P **17 Claims**



A pipette assembly for drawing and discharging liquid having a stroke control mechanism that produces a shorter stroke during liquid intake than on liquid discharge to assure complete fluid discharge, the control mechanism including an indexing sleeve carried by a main piston in the pipette, with the sleeve having opposed, axially disposed sets of flexible fingers in annular array that engage cams to positively rotate the indexing member in one direction in step-by-step fashion, bringing high and low stops on the indexing member selectively into engagement with abutments within the pipette.

3,766,785

AUTOMATIC PIPETTE

Ronald B. Smernoff, Belmont, Calif., assignor to Analytical Products, Inc., Belmont, Calif.

Filed May 17, 1971, Ser. No. 143,841

Int. Cl. B01l *3/02*

U.S. Cl. 73—425.6 **9 Claims**

A positive action pipette for conviently and accurately drawing and delivering liquids in quantities ranging from about one microliter to several milliliters is disclosed. The positive action of the pipette enables the operator to draw and deliver small quantities of liquids without exercising judgement or employing great dexterity. The positive action is achieved by means of a shaft member with an attached volume calibration nub which rides in calibration channels formed in the inner wall of the tubular housing of the pipette. The length of the calibration channels define drawing displacements and discharge displacements and, in one embodiment, an ejection displacement. The firm and positive ride of the shaft member within the tubular housing enables the operator to quickly and cleanly draw and discharge liquid from the disposable tip por-

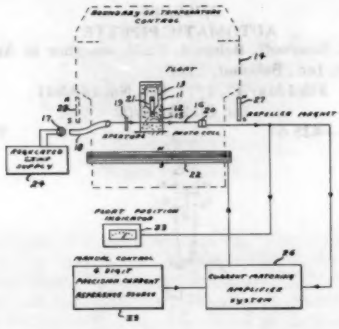
tion of the pipette. After discharge of the liquid, in one embodiment, the disposable tip may be ejected by moving the shaft member through an ejection displacement by guiding the volume calibration nub longitudinally along an ejection channel. High accuracy is achieved by minimizing the compressible air column interspaced between the tip of a plunger and the liquid being drawn into a disposable tip and by minimizing the number of critical sealing points so air leaks are substantially eliminated. The air column is minimized by means of a precision plunger assembly containing a precision plunger which rides in a precise friction fit within a precision molded bore composed of a resilient material. Air leaks are minimized because the only critical seals are the precise friction fit and the press fit of the disposable tip onto the end of the plunger assembly. An elongated disposable tip fits over the end of the plunger assembly to receive the liquid. When very small amounts of liquid, e.g., 10μl are drawn into the disposable tip it is advantageous if the disposable tip is adapted to receive the precision plunger. The shape of the tip is such that if it receives the precision plunger it does so with a minimal air column between the liquid and the tip of the plunger. The precision plunger is retractable at least partially within the plunger assembly. The ride of the volume calibration nub in the calibration channels is controlled by lining up an indicator, e.g., a line or an arrow on the shaft member with indicator markings, e.g., lines on the top of the tubular housing.

3,766,786

MAGNETIC FLOAT PYCNOMETER

Matatiahu Gehatia; Karl G. Leinberger, and Donald R. Wiff, all of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 2, 1971, Ser. No. 204,243
Int. Cl. G01n 9/18
U.S. Cl. 73—453 **1 Claim**



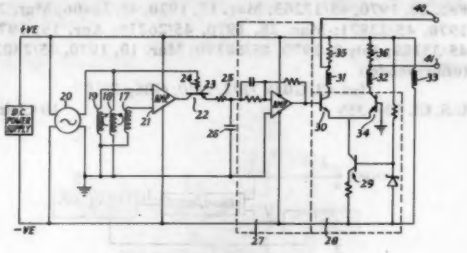
A magnetic float pycnometer system for precise measurements of liquid densities is disclosed. A float having a permanent magnet, enclosed in a closed couette, centered horizontally by the repelling action of three external magnets, is positioned vertically with respect to a light beam by the resultant forces of buoyancy acting in an upward direction, gravity acting downward, and the downward acting magnetic force resulting from the interaction of the magnetic field from the magnet in the float and the magnetic field created by a current in an external solenoid. Vertical stability is achieved by operating the float magnet at or near the point of inflection of the magnetic field of the solenoid where a decreasing force with decreasing displacement of the float from the solenoid exists. The magnitude of the current in the solenoid to position the float is a relative measure of the density of the fluid in the couette.

3,766,787

ACCELEROMETER FOR MEASURING ANGULAR ACCELERATIONS

John Anderson Irvine, Midlothian, Scotland, assignor to Brown Brothers & Company Limited, Edinburgh, Scotland

Filed July 1, 1971, Ser. No. 158,880
Int. Cl. G01p 15/08
U.S. Cl. 73—516 R **13 Claims**



An angular accelerometer comprises a rotor rotatably supported in a stator by air bearings. An inductive sensor is mounted on the stator and arranged to detect displacement of the rotor from a datum relative to the stator. A torquer, comprising two coils connected in a circuit so that the currents through the coils can be varied differentially, is also mounted on the stator. The sensor and torquer are disposed transversely of a cooperating ferromagnetic bar which extends transversely on the rotor. The sensor includes two coils and has an associated source of oscillating flux so arranged that the reluctance between the source and the two coils is varied differentially when the rotor is displaced. The sensor coils are connected through a differential amplifier and a phase-sensitive detector to the torquer. The current in the torquer coils is varied differentially in response to variations of the signal from the phase-sensitive detector to produce a torque on the rotor proportional to the angular acceleration of the stator to maintain the rotor substantially in its datum position. An output provides a signal proportional to the torque to indicate the angular acceleration. The spacing between the torquer and the ferromagnetic bar is much greater than the spacing between the sensor and the bar so that there is substantially no change of reluctance between the torquer coils and the bar on a change of angular acceleration of the stator.

3,766,788

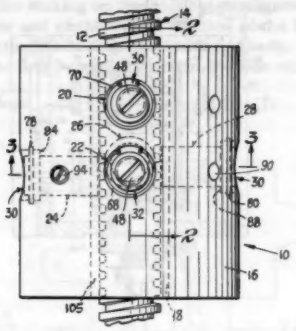
RADIAL ROLLER ANTI-FRICTION TRANSMISSION WITH ECCENTRIC BUSHINGS

Joseph R. Metz, Ridgefield, Conn., assignor to Norco, Inc., Ridgefield, Conn.

Filed Aug. 23, 1972, Ser. No. 283,162
Int. Cl. F16h 55/18, 1/18, 55/22
U.S. Cl. 74—441 **17 Claims**

A mechanical transmission having an anti-friction nut construction which comprises an annular body member provided with a longitudinal bore to receive a cooperable member in the form of a screw or bar, and with a plurality of roller elements extending radially into the bore for engagement with side wall surfaces of the cooperable member. The body has sockets in which there are eccentric bushing assemblages carrying the roller elements on anti-friction bearings. The assemblages are rotatable in the sockets, and thus the positions of the roller elements can be minutely adjustably shifted laterally. Locking means secure the assemblages against movement once they are properly positioned. The above arrangement enables a given nut to be used with screws or bars of slightly differing tolerances and pitches, since the roller elements can be shifted within limits to accommodate the slight

inevitable manufacturing variations. Alternately, the bushing assemblages can be adjusted so the rollers engage opposite



side walls of the groove of the screw or bar, and thus backlash can be reduced to zero. The assemblages are easily removable from the body to facilitate servicing and replacement.

3,766,789

APPARATUS FOR INTERMITTENT, UNIDIRECTIONAL ROTATION OF CIGARETTE TRAYS

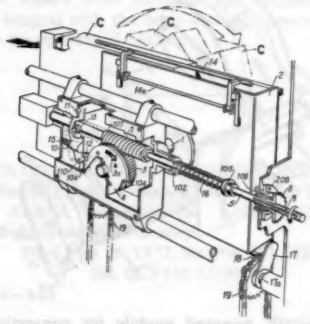
Italiano Cartoceti, Via Della Robbia 6, and Giancarlo Orlandi, Via S. Felise 92, both of Bologna, Italy

Filed Nov. 26, 1971, Ser. No. 202,111

Claims priority, application Italy, Dec. 1, 1970, 13063 A/70

Int. Cl. F16h *27/04*

U.S. Cl. 74—84 **5 Claims**



Cigarette tray in automatic cigarette packing mechaine is rotated through 180° to return it to an upright position by an intermittent drive comprising a worm gear on a shaft carrying a tray holder, a disk driven with the worm gear and having stops for restraining rotation of the worm gear, a detent engageable with such stops and a worm engaging the worm gear and mounted on a continuously rotating shaft which is axially slidable against spring pressure, the worm and its shaft moving axially when the worm gear is restrained until it disengages the detent from the disk stop which permits rotation of the worm gear and return of the worm by the spring pressure to a normal position with accompanying rotation of the tray holder.

3,766,790

NON-JAMMING BALL SCREW LINEAR ACTUATOR

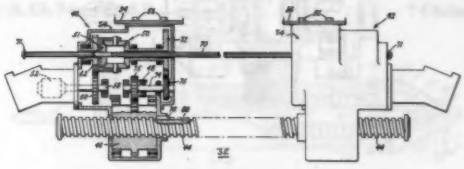
Norman Weir, Swarthmore, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 29, 1971, Ser. No. 213,498

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.15 **8 Claims**

An actuator for moving two elements with respect to one another having structural redundancy so as to maintain the actuator in an operable condition notwithstanding actuator component failures. Two drive mechanisms each connected to an element are mounted on a common track so each is movable



with respect to the track. The drive mechanisms are connected to a common shaft which will transmit power from one mechanism to the other in the event of a power loss or other failure in one of the mechanisms.

3,766,791

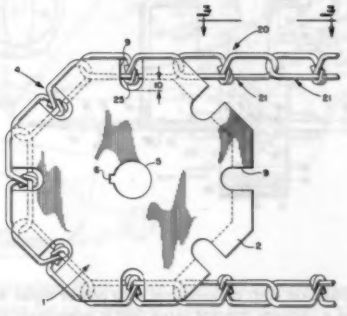
POCKET WHEEL FOR WELDLESS CHAIN

Walter G. Huttinger, York, Pa., assignor to Campbell Chain Company, York, Pa.

Filed Feb. 14, 1972, Ser. No. 225,850

Int. Cl. F16h *55/30*

U.S. Cl. 74—243 H **6 Claims**



A pocket wheel for driving weldless chains is provided having a predetermined thickness and shape to define a plurality of lateral edge surfaces, each such surface having a pair of circumferentially oriented V-shape notches separated by a deeper transverse drive groove, the notches being narrower than the width of the lateral edge surface and symmetrically alternated with respect to the mid-circumferential plane of the wheel.

3,766,792

PLANER DRIVE SYSTEM

Gert Braun, and Ernst Braun, both of Essen-Heisingen, Germany, assignors to Halbach & Braun, Wuppertal-Barmen, Germany

Filed Nov. 23, 1971, Ser. No. 201,430

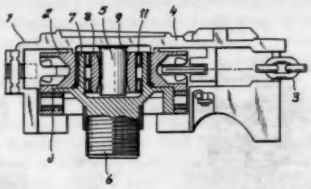
Claims priority, application Germany, Nov. 24, 1970, P 20 57 605.0

Int. Cl. F16h *55/30*; F16c *23/06*

U.S. Cl. 74—243 H **8 Claims**

A chain-driven planer blade, e.g. of a coal cutter or like subterranean excavator, is driven from a sprocket wheel mounted on a cantilevered stud of the drive housing. The stud extends

into the hollow shaft of the sprocket wheel from one side while the shaft is driven by a transmission and motor from the other side to enable replacement of the transmission without removal of the sprocket wheel or opening of the chain.

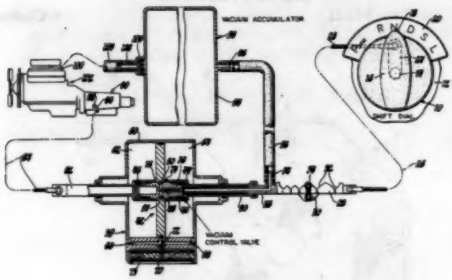


3,766,793

TRANSMISSION SHIFT CONTROLS

Donald F. Knop, Spencerport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 15, 1972, Ser. No. 280,794
Int. Cl. F16h 5/06
U.S. Cl. 74—335 5 Claims



A transmission shift control unit with power assist which incorporates a vacuum control valve that is selectively moved to different positions by manual actuation of a drive range selector. Vacuum control valve movement triggers power piston movement to different stations to power shift the transmission into selected forward drive operating ranges, reverse, neutral or park. If no vacuum is available the transmission can be manually shifted into any operating range utilizing components of the unit as a mechanical linkage system.

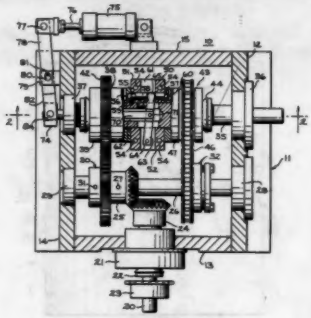
3,766,794

SHAFT ROTATION REVERSING DEVICE

Albert F. Wilcox, Yoder, Ind., assignor to General Electric Company, Indianapolis, Ind.

Filed Dec. 17, 1971, Ser. No. 209,183
Int. Cl. F16h 3/14, 57/10; F16d 11/04
U.S. Cl. 74—355 9 Claims

A mechanism for substantially instantaneously reversing the direction of rotation of a shaft. A pair of drive members are freely rotated about the shaft and an interconnection assembly is mounted for rotation with the shaft between the drive members. The interconnection assembly includes a pin having opposed, tapered ends which engage mating recesses in the drive members. The pin is sufficiently long that, as it moves from one drive member to the other, one end enters a recess in one adjacent drive member before the other exits from a recess in the other drive member. The pin is reciprocated by a hydraulic cylinder and piston through a linkage which is reciprocated by the piston and rotates with the shaft.

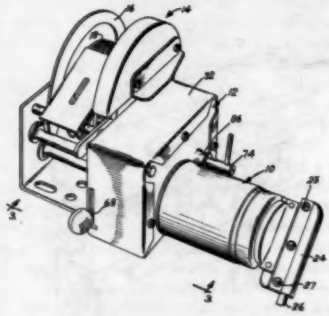


3,766,795

WINCH POWER MODULE WITH GEAR DISCONNECT

Wayne A. Priest, Kansas City, Kans., and Arthur D. Weigand, Hastings, Nebr., assignors to Dutton-Lainson Company, Hastings, Nebr.

Division of Ser. No. 94,274, Dec. 2, 1970, Pat. No. 3,687,249.
This application Mar. 6, 1972, Ser. No. 232,306
Int. Cl. F16h 57/06
U.S. Cl. 74—405 1 Claim



An electrically powered module for converting a hand winch from which the hand winch handle has been removed into an electrically operated winch. The power module includes an electric motor having a drive gear for driving the gears of a gear train. The gear train is housed between parallel, spaced plates, the motor being attached to one plate and the hand winch to the opposite plate. The drive gear and the winch drive shaft both extend to a position intermediate the plates and are connected by the gear train. A coil spring brake is provided as well as means for disengaging transmission by the gear train of the driving force of the motor drive shaft to the winch drive shaft.

3,766,796

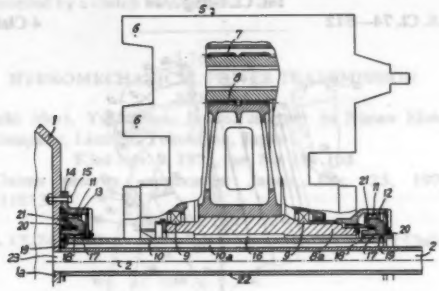
DEVICE FOR ROTATING A BODY BY MEANS OF AN EXTENSION PIECE

Georges Henriot, Gif-sur-Yvette, France, assignor to Engrenages Et Reducteurs, Velizy-Villacoublay, France

Filed Feb. 22, 1972, Ser. No. 227,927
Claims priority, application France, Feb. 26, 1971, 7106789
Int. Cl. F16h 57/00
U.S. Cl. 74—411 3 Claims

This invention relates to a device for rotating a body, constituted by at least one speed reducing unit, the driven

member of which is disposed substantially coaxially with the axis of rotation of the body, whilst said driven member is coupled by an extension piece, whose axis may have a slight angular clearance for making up the possible misalignment of the driven member and of the axis of rotation of the body, to a flange for rotating the body integral with said body, the driven member of the unit being disposed on the side opposite the



body with respect to said unit and said driven member comprising a central traversing cavity, through which the extension piece extends, wherein the body being hollow and having an aperture substantially coaxial to its drive flange and the extension piece having, in manner known per se, a coaxial cavity, a first hollow shaft traverses the extension piece, is rendered integral with the body and is connected in sealed manner to the opening of said body.

3,766,797

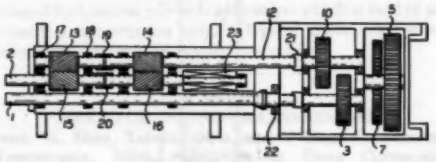
POWER DISTRIBUTING TRANSMISSION SYSTEMS

Wilhelm Hanslik; Heinz Ratheiser, and Friedrich Burger, all of Wien, Austria, assignors to Krauss-Maffei Aktiengesellschaft, Munchen, Germany

Filed May 15, 1972, Ser. No. 253,162

Int. Cl. F16h *57/00*

U.S. Cl. 74—410 **21 Claims**



The invention relates to a transmission system in which at least one shaft to which power is to be transmitted and at least another shaft parallel thereto are provided each with several gear wheels separately mounted and spaced from each other, the wheels on the different shafts meshing with each other so as to divide the momentum derived from the first shaft substantially equally over each of the meshing pairs of wheels.

3,766,798

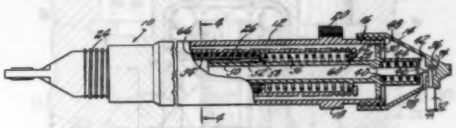
BALL-SCREW ACTUATOR WITH STOP MECHANISM

Edward H. Kusiak, Longmeadow, Mass., assignor to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 180,960, Sept. 16, 1971, abandoned. This application Oct. 4, 1972, Ser. No. 295,045

Int. Cl. F16h *1/18*

U.S. Cl. 74—424.8 R **7 Claims**



A ball-screw type of actuator is designed to have a plurality of stops for stopping the screw at a predetermined position wherein a single snubber assembly serves to absorb the torsional energy when the stops are engaged.

3,766,799

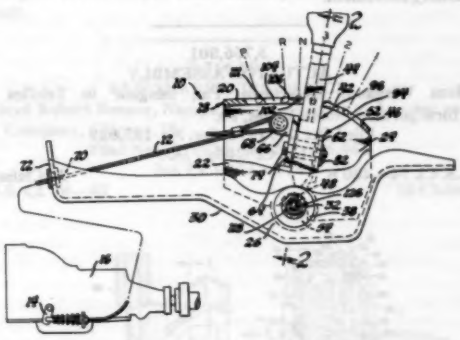
GEARSHIFT MECHANISM

Bernard G. DeSloovere, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 17, 1972, Ser. No. 307,438

Int. Cl. G05g *7/00*

U.S. Cl. 74—473 R **8 Claims**



The drawings illustrate an improved console-type gearshift mechanism for an automatic vehicle transmission, wherein the 1–2 and 2–3 forward speed shifts require just one unidirectional manual force application of a self-centering selector lever, with each forward speed range having a positive detent in both upshift and downshift directions, eliminating any possible overshifts.

3,766,800

VARIABLE EFFICIENCY MECHANICAL TRANSMISSION

John C. Kennedy, Georgetown, Conn., assignor to Narco, Inc., Town of Ridgefield, Fairfield, Conn.

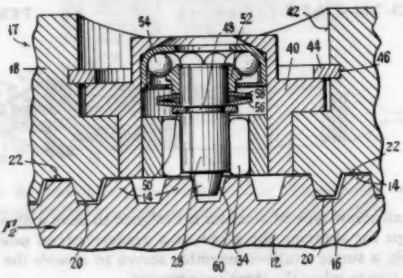
Filed June 30, 1972, Ser. No. 268,058

Int. Cl. F16h *1/18*

U.S. Cl. 74—424.8 R **10 Claims**

A variable efficiency thread-type nut for use with a screw having a helical thread, the nut comprising a body having a through bore to receive the screw, a roller carried by the nut body and extending into the bore thereof so as to engage the screw thread, bearing means mounting the roller for turning movement and also for movement between advanced and retracted positions in the nut body, and yieldable means for biasing the roller to its advanced position and into engagement with the thread of the screw, as well as a thread means comprising one or more elements or shoulders rigidly carried in the bore of the nut body and engageable with a part of the screw thread. The thread elements or shoulders are normally out of engagement with the screw thread at such time as the axial loading between the screw and the nut is less than a

predetermined level. Under these circumstances, the roller remains biased to its advanced, thread-engaging position. When the load exceeds the predetermined level, the biasing means enables the roller to yield under the load and thus shift to a retracted position whereupon the rigid shoulder or thread



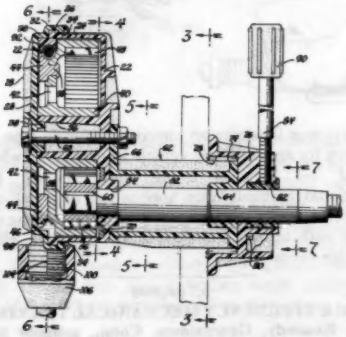
of the nut body frictionally engages the screw thread and effects an increased drag therewith, thus tending to retard relative (usually retrograde) turning between the nut body and screw. Upon removal of the heavy load, the roller again assumes its advanced, thread-engaging position and the shoulder becomes disengaged from the screw threads, thus enabling the nut and screw to undergo the normal, especially free relative turning movement.

3,766,801

ACTUATOR ASSEMBLY

Hans Wiegand, Boyertown, Pa., assignor to Teleflex Incorporated, North Wales, Pa.

Filed Oct. 27, 1971, Ser. No. 193,029
Int. Cl. G05g *11/00*
U.S. Cl. 74—480 B **26 Claims**



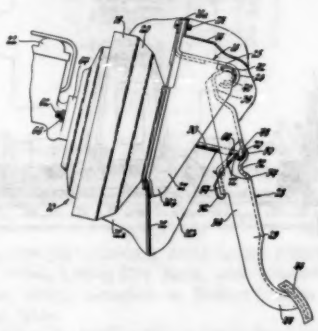
A rotary actuator assembly of the type for longitudinally moving a flexible motion transmitting core element to transmit motion in a curved path. The assembly includes a housing comprising a base and a cover which are snapped together and wherein the base and cover are made of plastic. An annular axle portion is integral with the base and extends toward the cover and rotatably supports a circular drive means which includes an internal gear and a peripheral groove for receiving a core element. A shaft is rotatably supported by the housing and supports a pinion which engages the internal gear. A barrel housing extends from the base portion and surrounds the shaft and a bezel is attached to the end of the barrel housing. A friction or drag device threadedly engages the bezel and forces a collar against the shaft to control rotation of the shaft. The barrel housing is attached to the base by bolts, one of which extends centrally through the housing. A retainer is disposed in the housing and includes a groove for surrounding the core element so as to retain the core element in the groove in the circular drive member.

3,766,802

BRAKE PEDAL ASSEMBLY

Ronald L. Shellhause, Vandalia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 6, 1972, Ser. No. 312,701
Int. Cl. G05g *1/14*
U.S. Cl. 74—512 **4 Claims**



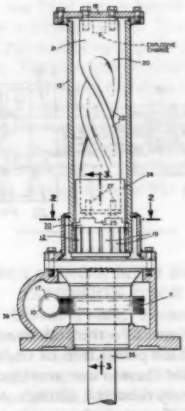
This invention involves providing a brake pedal assembly which comprises a brake pedal lever wth a socket portion, a push rod with a headed end portion positioned within the socket portion, and a spring which is supported upon the brake pedal lever and which biasingly retains the headed end portion of the push rod in firm engagement with the socket portion to provide for the headed end portion of the push rod to pivot in engagement with the brake pedal lever and within the socket portion when the push rod is moved axially in response to operative movement of the brake pedal lever.

3,766,803

VALVE OPERATOR WITH EXPLOSIVE CARTRIDGE

Russell C. Ball, Jr., and Walter J. Denkowski, both of Malvern, Pa., assignors to Philadelphia Gear Corporation, King of Prussia, Pa.

Filed Apr. 24, 1972, Ser. No. 246,990
Int. Cl. F16h *35/00*
U.S. Cl. 74—625 **12 Claims**



A valve operator incorporates an explosive actuator which includes an elongated twisted steel tube, for emergency use in,

for example, closing a valve quickly. When the emergency arises, the explosive charge in the twist actuator is fired and the gases generated by the explosion cause the twisted steel tube to untwist. One end of the twist actuator is fixed. The other end, which is free to rotate, is connected to the valve stem. Rotation of the free end of the twist actuator moves the valve quickly to the desired emergency position, which may be either the closed or open position. Two forms are disclosed. In one, the twisted-tube actuator is a series component of the normal gear drive. In the other, the actuator is coupled or decoupled by a clutch mechanism.

3,766,804

HYDROMECHANICAL POWER TRANSMISSION SYSTEM

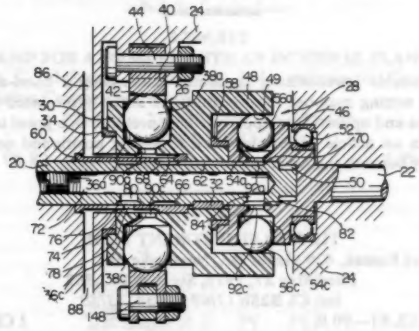
Yoichi Mori, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 9, 1971, Ser. No. 197,105

Claims priority, application Japan, Dec. 25, 1970, 45/118133

Int. Cl. F16h *47/04*

U.S. Cl. 74—687 **9 Claims**



A hydromechanical power transmission system is disclosed, including a positive-displacement variable-speed piston-type hydrostatic power transmission driven by an input shaft and a coordinating planetary gear train connected to an output shaft. The hydrostatic transmission is made up of a variable-displacement unit connected to the input shaft and usually acting as a pump and a constant-displacement unit positioned in series with the variable-displacement unit and usually acting as a hydraulic motor. A portion of the power input is transmitted to the output shaft through the hydrostatic transmission and the remaining portion is transmitted by the planetary gear train as a mechanical transmission unit so that the power transmission efficiency is higher than that attained in the conventional hydrostatic power transmission which is void of such mechanical transmission unit. A typical application of such transmission system is an automotive vehicle.

3,766,805

SPEED CHANGING TRANSMISSIONS

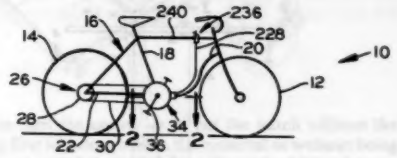
Dennis W. Shea, Toledo, Ohio, and William C. Stoneman, Temperance, Mich., assignors to Dana Corporation, Toledo, Ohio

Filed Jan. 24, 1972, Ser. No. 220,283

Int. Cl. F16h *57/10, 3/44*

U.S. Cl. 74—768 **28 Claims**

A three-speed transmission of the planetary type having three sets of planet gears, three sun gears and three ring gears. All planet gears are mounted on and driven by one common carrier which is connected to the input shaft. The sun gears are carried by an output shaft which is rotatably mounted on the input shaft and which extends from the transmission housing to carry a driving sprocket. A shifting mechanism, including a plurality of spring-loaded shifting pawls engageable with the ring gears and operable by a slotted shifting shaft, is selectable to maintain a desired one of the ring gears stationary relative to the housing to provide the desired speed ratio between the input and output shafts. The shifting mechanism in one embodiment also includes a mechanism which engages the first speed ring gear whenever the transmission input is driven in reverse and in another embodiment also includes a mechanism which engages one of the ring gears whenever the shifting pawls are all in their neutral position and the transmission input is driven in the forward direction. The transmission is shown adapted for use as a bicycle drive and mounted such that the transmission housing is fixed against rotation relative to the bicycle frame; the pedal crank being the input shaft to the transmission and extending completely through the same and being rotatably mounted in the bicycle housing with the sun gear driven output shaft rotatably mounted on the input shaft.



3,766,806

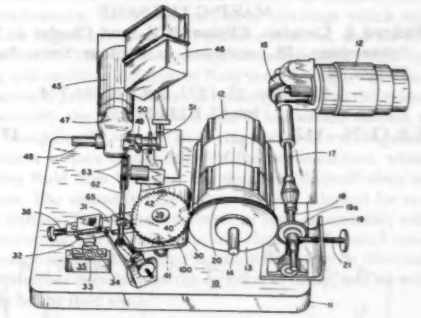
SAW SHARPENING DEVICE

Lloyd Robert Benner, Nampa, Idaho, assignor to Armour and Company, Chicago, Ill.

Filed Nov. 8, 1971, Ser. No. 196,462

Int. Cl. B23d *63/14*

U.S. Cl. 76—42 **10 Claims**

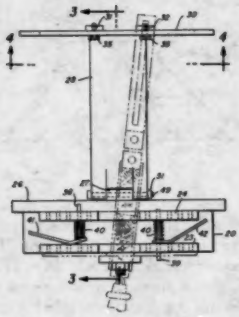


A device for sharpening a circular knife or saw which provides a support for the knife and is tiltable to bring the knife into and out of contact with a grinding wheel. The invention includes mechanism for turning the knife to present the next tooth or section of the knife for grinding and which includes means for counting the sections as they are sharpened and turns the device off when all sections have been sharpened. Automatic driving means are included which produce these functions in proper sequence. Included also are permanent magnets for holding the knife against vibration while still permitting turning, and a special carriage for the rod in the knife turning mechanism to keep the rod in its intended longitudinal movement.

3,766,807
CONTROLLED CONCENTRICITY CIRCULAR SAW FILING MACHINE

George N. Combs, 1234 S. University Ave., Fayetteville, Ark.

Filed Nov. 22, 1971, Ser. No. 201,070
Int. Cl. B23d 63/10
U.S. Cl. 76—31 9 Claims

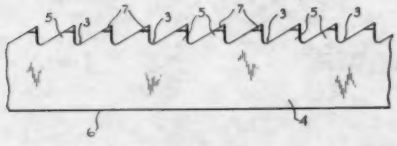


This invention describes a saw filing machine for circular saw blades which includes means to mount the blade, a notched frame of hardened material to guide the file, pins to index the blade one tooth at a time so that each tooth comes, in turn, to the proper position for filing, a file fixture to preset the angle at which the surface of the file hits the tooth in a horizontal, vertical, and rotational angle. By this means the saw can be filed with each tooth exactly the same radius and the same angle.

3,766,808
BI-METAL SAW BLADE STOCK AND METHOD OF MAKING THE SAME

Richard S. Cremisio, Clinton, N.Y., and Charles J. Brabec, Schaumburg, Ill., assignors to Contour Saws, Inc., Des Plaines, Ill.

Filed Apr. 17, 1972, Ser. No. 244,774
Int. Cl. B23d 63/00
U.S. Cl. 76—112 17 Claims

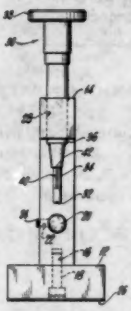


A bi-metal band saw blade wherein the tips of the teeth are formed of high speed steel which was in the powdered state at the time it was joined to the back-forming steel, and a method of making bi-metal strip stock for the production of such bi-metal band saw blades, wherein the tooth tip-forming steel in the powdered state is bonded to the back-forming steel which is either in the form of a solid bar or also in the powdered state, by hot isostatic pressing which forms the two steels into an integral slab that is rolled into a strip.

3,766,809
JEWEL-SETTING APPARATUS

Leo Schneider, Miami, Fla., assignor to Wm. Schneider, Inc., Miami, Fla.

Filed Oct. 6, 1971, Ser. No. 187,017
Int. Cl. B23p 5/00; G04d 3/04
U.S. Cl. 81—7 5 Claims

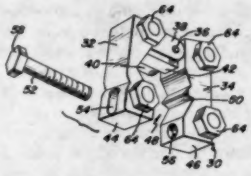


Portable jewel-setting apparatus comprising a hand-actuated setting member removeably and slidably mounted in a frame and operative to apply variable pressure to a jewel to be set in an article of jewelry such as a ring positioned on an arbor beneath the tip of the setting member.

3,766,810
TIE ROD ADJUSTMENT TOOL

Albert Romak, 429 Mayor Dr., Northlake, Ill.

Filed May 27, 1971, Ser. No. 147,362
Int. Cl. B25b 13/02, 13/56, 13/30
U.S. Cl. 81—90 R 1 Claim



A tool for use in rotatably adjusting the slotted sleeve of a vehicle wheel tie rod assembly. A pair of pivotally connected jaws are positioned about the sleeve with a tooth extension member engaged within the slot. A bolt is provided to draw the jaws together thereby firmly engaging the tooth within the slot and to spread the sleeve so as partially to free the same from the rods retained thereby. The sleeve is tightly engaged within a vise clamping area of the tool so that the sleeve may be rotated upon rotation of the tool.

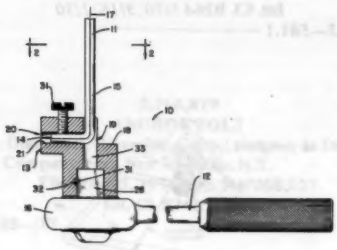
3,766,811
ALLEN WRENCH HOLDER

Earnest C. Callahan, 7121 Chandler Dr., Indianapolis, Ind.

Filed Mar. 2, 1972, Ser. No. 231,334
Int. Cl. B25b 13/00
U.S. Cl. 81—180 R 7 Claims

A tool for operably engaging an Allen type wrench. An adapter is mounted to a handle and is rotatable by the handle about a driving axis. The adapter includes a groove extending along the axis and a bore opening into the groove and extend-

ing at an approximate right angle with respect to the groove. A locking member is threadedly mounted to the adapter and projects into the bore. One shank of the Allen type wrench is



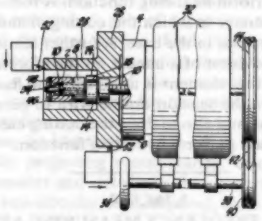
locked within the bore by the member whereas the second shank of the Allen wrench is received in the groove. The bore is provided with a cross sectional shape identical with the shank cross sectional shape of the Allen wrench.

3,766,812

CLAMP FOR A MEMBER WITH AN INTERNAL FLANGE

John C. McEwen, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 21, 1972, Ser. No. 282,432
Int. Cl. B23b *33/00*
U.S. Cl. 82—40 R 2 Claims



A clamp for a member with an internal flange which includes two nuts mounted on a threaded stud extending from a clamping surface. The outside nut has a plurality of shafts spaced equidistantly around the stud and extending axially toward the inside nut. On each shaft a wing is free to pivot inside or outside the outer diameter of the nut. The inside nut has a plurality of stops, one projecting between each pair of wings, and requires significant torque to rotate. Therefore as the outside nut is tightened, the wings are spread by the stops to engage the inner flange and hold the clamped member against the clamping surface; and as the outside nut is loosened the stops retract the wings so the clamped piece can be removed from the stud.

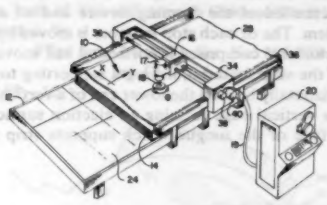
3,766,813

METHODS FOR CUTTING SHARP CORNERS AND NOTCHES IN LAYUPS OF FABRIC AND OTHER SHEET MATERIAL

David Raymond Pearl, West Hartford, Conn., assignor to Gerber Garment Technology, Inc., East Hartford, Conn.

Filed Aug. 5, 1971, Ser. No. 169,264
Int. Cl. B26d *3/14*, *1/10*
U.S. Cl. 83—56 6 Claims

A layup of sheet material is cut by a cutter having a reciprocating cutting blade with a sharp forward cutting edge. During cutting along a given line of cut the cutting blade extends through the layup during at least a portion of each of its strokes, and when a sharp corner or notch point is reached the blade is rotated while remaining in cutting engagement with



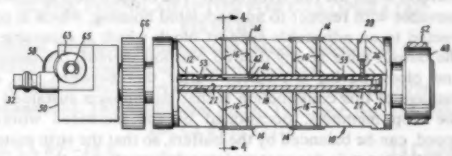
the layup to turn the corner or to cut the notch without the blade being first withdrawn from the material or without being moved through a path departing from the desired line of cut.

3,766,814

AIR EJECT DIE-CUTTING ASSEMBLY

Martin Kesten, West Hartford, Conn., assignor to Preston Engravers, Inc., Windsor, Conn.

Filed May 25, 1972, Ser. No. 256,959
Int. Cl. B26d *7/06*
U.S. Cl. 83—99 31 Claims



A rotary assembly for controlled fluid flow utilizes an external member having a chamber of generally circular cross section and an internal member seated therein for relative rotation therebetween. Both members have openings which are located for alignment upon such relative rotation, and the internal member has a passageway communicating with its opening and enabling the flow of fluid therethrough. An elongated recess is provided about the opening of one of the members, generally the internal one, and it has seated therein a radially compressed O-ring. The O-ring serves as a seal against the adjacent surface of the other of the two members, while permitting fluid flow between the openings thereof when in alignment. The assembly may be particularly adapted for rotary die cutting. The external member of such an assembly will be a die-cutting roll having a cutting element of closed configuration on its outside surface to which fluid may be directed from an internal manifold for the ejection of scrap, and air will normally be the fluid used.

3,766,815

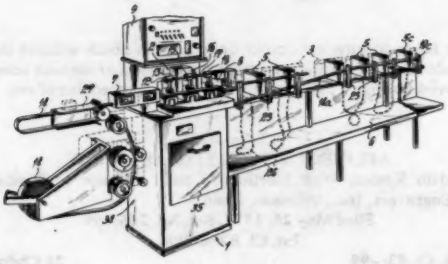
APPARATUS FOR FORMING STRIP

Gerardus Hendrikus Edixhoven, Voorschoten, Netherlands, assignor to Hunter Douglas International N.V., Curacao, Netherlands Antilles

Filed Dec. 29, 1971, Ser. No. 213,548
Claims priority, application Germany, Jan. 8, 1971, P 21 00 646.2
Int. Cl. B26d *7/16*
U.S. Cl. 83—160 9 Claims

An apparatus according to the invention comprises means for feeding strip material, means for forwarding the strip material through a forming station including a forming device such as a punching and/or cutting and/or machining device, an output table having one or more stop devices adjustable lon-

gitudinally with respect to the direction of forwarding of the strip material, the stop device or devices including a stop member driven by an electric motor so as to be movable transversely of the path of the strip material downstream of the forming station, means associated with the stop member for initiating actuation of the forming device and an electrical control system. The or each stop member is moved by a linear electric motor and comprises a horizontal rail movable into the path of the strip material, having a supporting tongue extending horizontally beyond the lower end of a vertical edge of the rail, the vertical edge forming an ejection surface above the top surface of the tongue which supports strip material



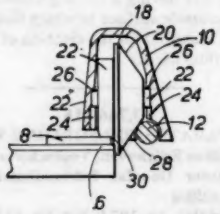
thereon when the rail is retracted. The or each stop member is movable with respect to an associated housing, which is connected to an adjustable support block which is securable to the output table at any desired position thereof, the housing and block having a resilient buffer therebetween. An advantage of this construction is that the impacts sustained by the stop members, occasioned by the increased working speed, can be balanced by the buffers, so that the strip material or the cut strip does not undergo deformation in the longitudinal direction, which would have the consequence that the punching and the severing cuts would not take place at the intended positions.

3,766,816

APPARATUS FOR CUTTING PAPER AND THE LIKE

Barry Ian Loveless, Woking, England, assignor to Send Engineering Ltd., Woking and M. Myers & Son Limited, Oldbury Warley Worcestershire, England

Filed Nov. 26, 1971, Ser. No. 202,226
Int. Cl. B23d *19/02;* **B26d** *1/20*
U.S. Cl. 83—489 **9 Claims**



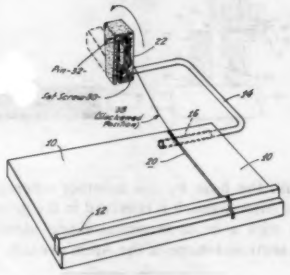
Apparatus for cutting paper, card or the like, having a rotary cutter wheel which is movable along the lateral edge of an elongate fixed blade so as to cut or shear by a continuous scissors action, and in co-operation therewith, a friction drive wheel which rotatably drives the rotary cutter wheel as the cutter is drawn along the fixed blade, and a housing partially enclosing the cutter wheel.

3,766,817

FOOD SLICER

John F. Aby, Kewanee, Ill., and James L. Davis, Placentia, Calif., assignors to Prodyne Enterprises, Los Angeles, Calif.

Filed Dec. 6, 1971, Ser. No. 205,061
Int. Cl. B26d *5/10, 3/16, 1/30*
U.S. Cl. 83—581.1 **7 Claims**



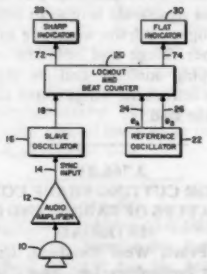
An improved slicing device is provided for foods such as cheese, butter, fruit, vegetables or the like, for cutting the food into slices of any desired thickness. The device to be described comprises a base which provides a flat cutting surface, and it also includes a cutting element, such as a wire, or blade, which extends transversely across the base, and which is mounted on a U-shaped bar in such a way that when the bar is turned, the wire is pivoted downwardly into a transverse slot in the base to perform its slicing function. A feature of the invention is the manner in which the cutting element serves to hold the U-shaped bar in the base. A further feature of the invention is the provision of a handle on the aforesaid bar, and to which the cutting element is attached. The handle may be turned to remove the tension on the wire to permit replacements to be made, and also to draw the cutting element taut so that it may properly perform its cutting function.

3,766,818

ELECTRONIC FREQUENCY MEASURING APPARATUS

Leroy A. Prohofsky, 6841 Knox Ave., South, Minneapolis, Minn.

Filed May 1, 1972, Ser. No. 249,310
Int. Cl. G10g *7/02*
U.S. Cl. 84—454 **9 Claims**



An electronic device to facilitate the comparison of a signal of an unknown frequency with a reference frequency for

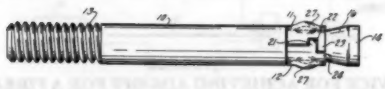
producing an indication as to whether the unknown frequency is greater than, equal to, or less than the reference frequency is described.

3,766,819

ANCHOR BOLT

Louis N. Giannuzzi, Riverside, Conn., assignor to Die Cast and Forge Company, Inc., New Rochelle, N.Y.

Filed Dec. 3, 1971, Ser. No. 208,027
Int. Cl. F16b *13/06*
U.S. Cl. 85—77 9 Claims



An anchor bolt including a cylindrical body having a reduced diameter portion near one end and an outwardly flaring portion extending from the reduced diameter portion toward that one end. A pair of expansion members encircle the reduced diameter portion. Each expansion member is a curved resilient element extending through an angle greater than 180°, e.g. 220°, and the expansion members have cooperable interlock means for transmitting axial movement of one expansion member to the other. The two expansion members may be identical to each other, and each may have an outwardly projecting protuberance. One or both of the reduced diameter and outwardly flaring portions of the body may have a non-circular, e.g., elliptical, cross-sectional shape.

3,766,820

APPARATUS FOR CONTINUOUS MELT-POUR OF HIGH EXPLOSIVES

Irving Forsten, West Orange; Louis Jablansky, Fair Lawn; Colin B. Piper, Sparta, and John J. Canavan, Mine Hill, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 174,078, Aug. 23, 1971. This application Dec. 5, 1972, Ser. No. 312,417
Int. Cl. F42b *33/02*
U.S. Cl. 86—23 8 Claims

Method and apparatus are provided for a novel continuous, automated melt-pour process for high explosives, such as TNT, wherein flaked high explosive is continuously introduced into a vessel containing an agitated pool of the molten explosive and providing a high ratio of heating surface to volume of explosive and the molten explosive is continuously pumped to a remote shell loading station through a heated pipe system provided with detonation traps which prevent propagation of an explosion.

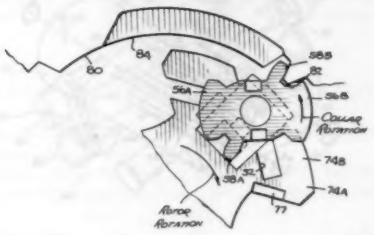
The invention described herein may be manufactured, used and licensed by or for the Government for governmental purposes without the payment to us of any royalty thereon.

3,766,821

BOLT ASSEMBLY HAVING A COLLAR ROTATABLE THEREON TO ACTUATE THE BOLT LOCK AND SEAR THE FIRING PIN

Thomas W. Cozzy, Burlington, and Robert Pettinga, Shelburne, both of Vt., assignors to General Electric Company, Burlington, Vt.

Filed June 14, 1971, Ser. No. 152,889
Int. Cl. F41d *7/04*
U.S. Cl. 89—12 8 Claims



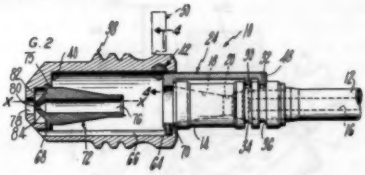
A bolt has a collar fully rotatable thereon, and which is actuated by spaced apart projections in the housing to lock and unlock the bolt. The collar also serves to sear the firing pin.

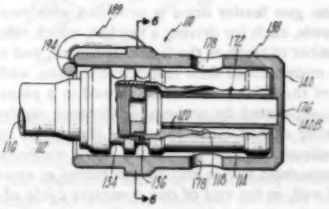
3,766,822

BLANK FIRING ADAPTOR FOR GAS OPERATED FIREARM

Nicholas Sophinos, Longmeadow, Mass., assignor to Colt Industries Operating Corp., Hartford, Conn.

Continuation-in-part of Ser. No. 73,550, Sept. 18, 1970, abandoned. This application Jan. 6, 1972, Ser. No. 215,790
Int. Cl. F41c *21/18*
U.S. Cl. 89—14 E 23 Claims





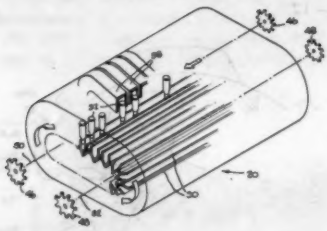
To adapt a gas operated firearm to fire blank ammunition, a generally cylindrical cap is releasably attached to a firearm muzzle and provides a muzzle gas trap including a metering orifice restriction for effecting operation of the firearm. The metering orifice restriction is aligned with a bore of the firearm muzzle, when the cap is attached, and is in communication with a passage in the cap having an opening generally equal to but slightly larger than that of the firearm bore. The cap has an enlarged debris collection compartment formed therein to surround the metering orifice restriction.

3,766,823

AMMUNITION HANDLING SYSTEM

Lawrence R. Folsom, Charlotte; Victor R. Gardy, Shelburne, and Gerard H. Donovan, Essex Junction, all of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Oct. 4, 1972, Ser. No. 294,851
Int. Cl. F41d 9/02
U.S. Cl. 89—33 D 11 Claims



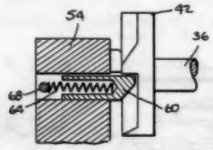
A linkless storage system for cased ammunition having an inner, articulated, transverse, endless chain, of longitudinally extending carriers operating within a stationary, conforming, outer, multiturn, channel, and a stationary rounds scooping device.

3,766,824

FEEDER DRIVE

Robert E. Chiabrandy, Burlington, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Dec. 10, 1971, Ser. No. 206,774
Int. Cl. F41d 9/02
U.S. Cl. 89—33 SF 6 Claims



Machine gun feeder drive is provided with two oppositely driven pawls, each for driving a ratchet, which ratchet has the same number of teeth as the feeder sprocket, and which pawls have the midpoints of their respective strokes, with respect to the axis of the driven ratchet as viewed in a plane normal to said axis, separated by an angular distance equivalent to an odd number of half-tooth spaces of the driven ratchet. The aforementioned feature causes the drive mechanism to have the characteristic that it may be assembled at any initial position, and will, at the end of one complete cycle of the driving pawls, have been moved into properly synchronized position.

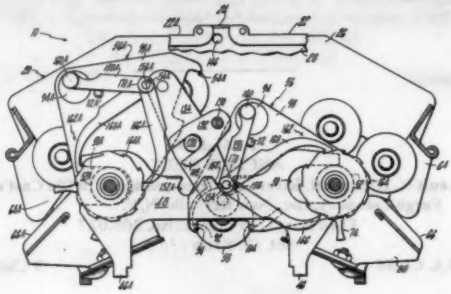
3,766,825

CARTRIDGE FEEDER

Russell S. Robinson, Farmington, Conn., assignor to Colt Industries Operating Corp., Hartford, Conn.

Filed July 31, 1972, Ser. No. 276,555
Int. Cl. F41d 9/02
U.S. Cl. 89—33 SF 21 Claims

A dual cartridge feeder with alternatively operable sprocket drive and ramming tray assemblies each having a one-way escapement device for effecting two-step cartridge feed responsive to reciprocating motion of a recoiling member of the weapon between recoiled and runout (counter-recoiled) positions.

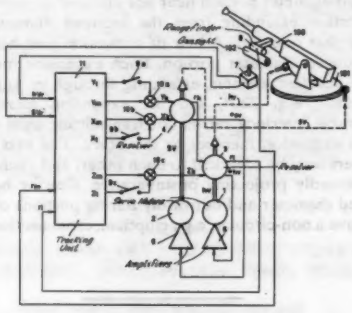


3,766,826

DEVICE FOR ACHIEVING AIM-OFF FOR A FIREARM

Hans Manne Alvar Salomonsson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Feb. 8, 1972, Ser. No. 224,470
Claims priority, application Sweden, Feb. 26, 1971, 2440/71
Int. Cl. F41g 3/06
U.S. Cl. 89—41 B 13 Claims



A gun is described in which a gun barrel and a gun sight are mounted for movement together in deploying the gun in azimuth and in elevation under the action of servo drive means. A tracking unit is provided to control the servo drive means, which may comprise separate servo motors for rotating an upper mounting of the gun in azimuth and for rotating the gun barrel in elevation relative to the upper mounting. The tracking unit has two separate phases of operation. In its first phase of operation, the tracking unit produces controlling signals which represent the behaviour of a target as sensed by a gun layer controlling an aiming device and a rangefinder to produce aiming and range signals which form inputs to the tracking unit. In its second phase of operation, the tracking unit produces controlling signals which represent a predicted behaviour of the target by maintaining constant a function of the controlling signals which is determined by the particular nature the controlling signals take and the assumed behaviour of the target. When the controlling signals represent the Cartesian coordinates of the position vector of the target, and it is assumed that the target is moving with constant velocity along a straight line at the time of firing the gun, the time derivative of the controlling signals is maintained constant. Auxilliary circuits are described by which aim-off corrections may be

made on the basis of the estimated time of flight of a projectile to the target depending on known ballistic properties of the projectile and on ambient atmospheric conditions.

3,766,827

APPARATUS FOR IMPROVING THE QUALITY OF THE INDEPENDENT LINE OF SIGHT WHEN SIGHTING WITH DIRECT-SIGHTED WEAPONS

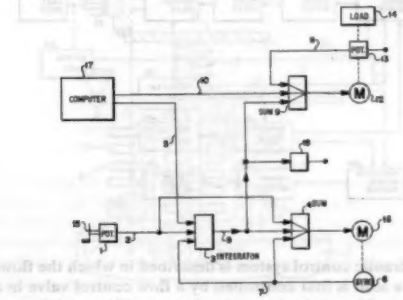
Carl Torbern Teiling, Lidingo, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

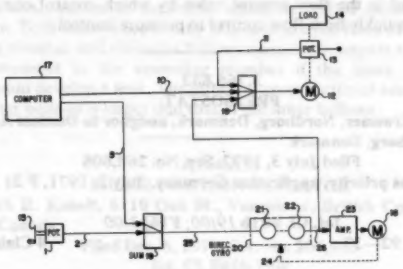
Filed Apr. 7, 1972, Ser. No. 241,995

Claims priority, application Sweden, Apr. 8, 1971, 4652/71

Int. Cl. F41g *3/02*

U.S. Cl. 89—41 M 6 Claims





Apparatus for the control of the sight on a direct-sighted weapon which in respect of at least one axis of rotation of the sight electromechanically coupled to the weapon, whereby the weapon operator manually acts upon the orientation of the optical line of sight by integration of the control speeds, and where difference angles corresponding to the fire-control values calculated by the computer of the weapon can be introduced between the sight line and the axis of the weapon, and signals from reference elements on the weapon are made use of for the determination of difference angles between the actual position and the desired position.

3,766,828

MODULAR AIRBORNE LAUNCHER

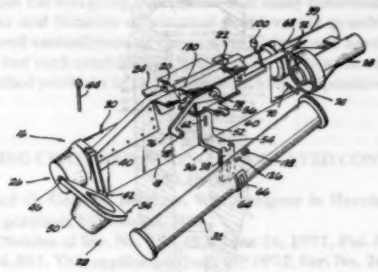
Ernest Cords, Palos Verdes, Calif., assignor to Hughes Aircraft, Culver City, Calif.

Continuation of Ser. No. 882,986, Dec. 8, 1969, abandoned. This application Oct. 4, 1971, Ser. No. 186,555

Int. Cl. F41f *3/04*

U.S. Cl. 89—1.8 8 Claims

Missile-launching apparatus for mounting on aircraft, which enables conversion in the field between several configurations and which facilitates loading of missile containers in cramped locations. The apparatus includes a launching module having a central beam and a missile launcher on either side of the beam, the beam having mounts on its upper end for attachment to an aircraft bomb rack and mounted on its lower end for supporting another almost identical module. Each launcher includes a bulkhead at its front end, a debris tube at its rear end, and a gate at its center for receiving a missile-holding container. The missile container can be installed in a sideward direction by fully opening the gate, or in a front or rearward direction by pivoting open the bulk-head or debris tube. An arming handle is provided which sequentially moves a shear pin in the container to free the missile for launching, and then connects an electrical connector to the missile container.



3,766,829

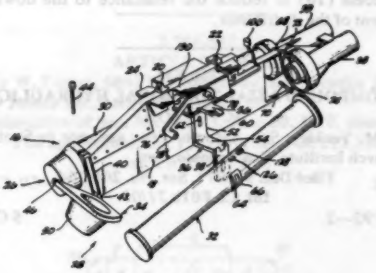
MODULAR AIRBORNE LAUNCHER

Ernest Cords, Palos Verdes, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 882,986, Dec. 8, 1969, abandoned. This application Oct. 4, 1971, Ser. No. 186,341

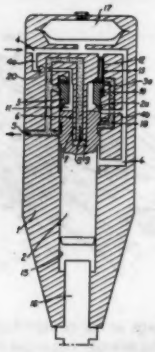
Int. Cl. F41f *3/04*

U.S. Cl. 89—1.815 5 Claims



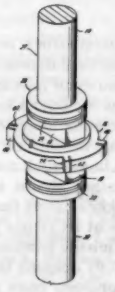
Missile-launching apparatus for mounting on aircraft, which enables conversion in the field between several configurations and which facilitates loading of missile containers in cramped locations. The apparatus includes a launching module having a central beam and a missile launcher on either side of the beam, the beam having mounts on its upper end for attachment to an aircraft bomb rack and mounted on its lower end for supporting another almost identical module. Each launcher includes a bulkhead at its front end, a debris tube at its rear end, and a gate at its center for receiving a missile-holding container. The missile container can be installed in a sideward direction by fully opening the gate, or in a front or rearward direction by pivoting open the bulkhead or debris tube. An arming handle is provided which sequentially moves a shear pin in the container to free the missile for launching, and then connects an electrical connector to the missile container.

3,766,830
PERCUSSION APPARATUS
Roger Montabert, 41-43, rue Bataille, Lyon, France
Filed Mar. 24, 1971, Ser. No. 127,643
Int. Cl. F15b 15/22; F01b 7/18; F01l 25/04
U.S. Cl. 91—2C 3 Claims



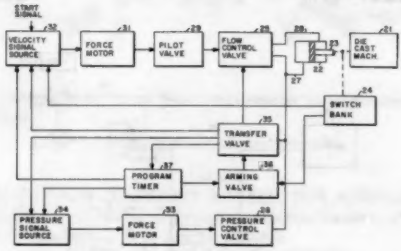
The piston (2) of a hydraulically operated percussion implement moves jointly with a juxtaposed distributor (3) in a cylinder bore to strike a tool (16) seated in the lower end of that bore. The admission of high-pressure oil to a space (11) adjacent a rear face of the piston is jointly controlled by the distributor and by a valve (20) inserted between that space and an inlet port. The distributor has an enlarged head (3*a*) which overlies a fluid cushion in an annular recess (10) communicating with an expansion chamber (9) in the piston, this chamber being defined by an axial bore (6) and a stationary plunger (7) entering same. One or more pushers (12) under oil pressure bear upon the distributor to depress it, in the wake of the piston, after the latter has begun its descent and causes the application of high pressure to a space (11*a*) above the distributor. The descent of the piston enlarges the expansion chamber (9) which thereby draws part of the oil from the annular recess (10) to reduce the resistance to the downward movement of the distributor.

3,766,831
COMPOUND AXIAL TORSIONAL HYDRAULIC ACTUATOR
Lester M. Yeakley, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.
Filed Dec. 9, 1971, Ser. No. 206,264
Int. Cl. F01b 21/00
U.S. Cl. 92—2 5 Claims



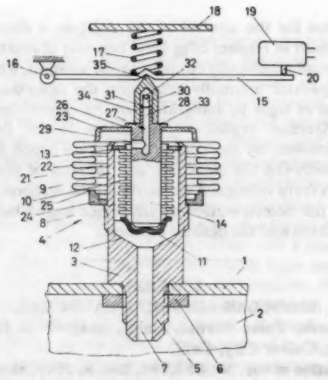
A compound axial torsional hydraulic actuator for use in supplying both linear and rotational motion to a single shaft. Only two moving parts are utilized, an axial actuator rod and a torsional transfer ring. All forces are transmitted to the actuator rod hydraulically and within a single cylinder. Movement in each mode is independent.

3,766,832
HYDRAULIC CONTROL SYSTEM
Paul F. Hayner, Lexington, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed Mar. 13, 1972, Ser. No. 234,094
Int. Cl. F15b 15/22, 12/042
U.S. Cl. 91—24 16 Claims



A hydraulic control system is described in which the flow of fluid to a load is first controlled by a flow control valve in accordance with a desired variation in rate of flow and then controlled by a pressure control valve in accordance with a desired variation in load pressure. An important feature is a split land in the flow control valve by which control can be shifted quickly from flow control to pressure control.

3,766,833
PRESSOSTAT
Asger Kraemer, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark
Filed July 3, 1972, Ser. No. 268,608
Claims priority, application Germany, July 3, 1971, P 21 33 216.1
Int. Cl. F01b 19/00; F16j 3/00
U.S. Cl. 92—37 4 Claims



The invention is a pressostat assembly which includes two bellows, one inside the other, which have fluid communication. Both bellows are fixedly attached to a rod form of operating member and the outer bellows operates to impart a closing

movement to the operating member if the inner bellows should develop a leak. The effective cross sectional area of the outer bellows is larger than that of the inner bellows. The rod form of operation member is provided with a passage for filling or evacuating a protective chamber surrounded by the protective bellows.

3,766,834

PRESSOSTAT

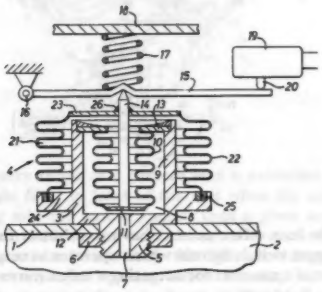
Asger Kraemer, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed May 24, 1972, Ser. No. 256,565

Claims priority, application Germany, May 25, 1971, P 21 25 809.3

Int. Cl. F01b *19/00*; **F16j** *3/00*

U.S. Cl. 92—35 **4 Claims**



The invention is a pressostat assembly which includes two bellows, one inside the other, which have fluid communication. Both bellows are fixedly attached to a rod form of operating member and the outer bellows operates to impart a closing movement to the operating member if the inner bellows should develop a leak. The effective cross sectional area of the outer bellows is larger that that of the inner bellows.

3,766,835

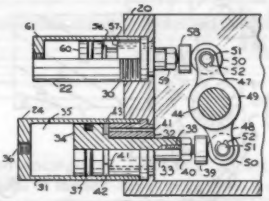
MULTI-POSITION ACTUATOR

Jack R. Kobelt, 6110 Oak St., Vancouver, British Columbia, Canada

Filed Dec. 6, 1971, Ser. No. 204,963

Int. Cl. F01b *7/04*

U.S. Cl. 92—68 **9 Claims**



This disclosure pertains to a novel mechanical means adapted for use with mechanical devices having more than one controlled position of operation, including a neutral position. A plurality of linear actuators are mounted in an assembly frame whereby their actuating forces are transmitted through torque arms to an actuator shaft, thus causing an actuator arm to assume responsive positions in a position arc. The actuator shaft torque created by a positioning linear actuator is opposed by a lesser torque created by a neutralizing linear actuator, leaving a torque differential sufficient to operate the mechanical device ultimately actuated. Where the neutral position is at either end of the position arc, one neutralizing linear actuator is required to hold the actuator arm against a stop in the position arc. Where the neutral position is required at some location inside the position arc, two neutralizing linear actuators are required. Each position other than neutral requires a positioning linear actuator. It is obvious from the foregoing description that many combinations of number and location of actuated positions are possible. The preferred embodiment of the invention disclosed herein illustrates one such combination having a central neutral and three controlled positions in each direction along the position arc.

3,766,836

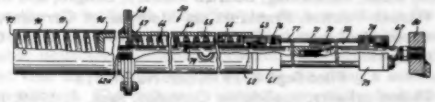
SPRING CENTERED, SPRING MODULATED CONTROL CYLINDER

Richard O. Gordon, Belgium, Wis., assignor to Harnischfeger Corporation, Milwaukee, Wis.

Division of Ser. No. 153,492, June 16, 1971, Pat. No. 3,696,881. This application June 15, 1972, Ser. No. 263,239

Int. Cl. F01b *11/02, 31/00*

U.S. Cl. 92—85 **3 Claims**



A vehicle steering system having a pair of fluid power cylinders for simultaneously actuating each wheel of a pair of steerable wheels, and also having a control cylinder for one of the power cylinders of each pair to cause said power cylinders to be actuated to different extents, consequently producing angular rotation of said steerable wheels in like directions, but in different amounts.

An improved spring centered and spring modulated control cylinder which is extended at a different rate than it is contracted.

3,766,837

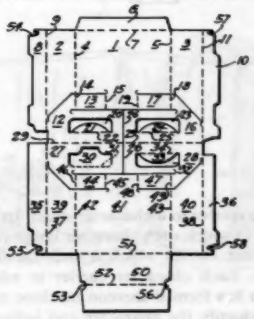
ARTICLE CARRIER

Homer W. Forrer, 6091 S. Expressway, and Prentice J. Wood, 259 Jodeco Rd., both of Jonesboro, Ga.

Continuation of Ser. No. 51,173, June 30, 1970, abandoned. This application Jan. 12, 1972, Ser. No. 217,130

Int. Cl. B31b *17/00*

U.S. Cl. 93—36.6 **2 Claims**



An article carrier having a bottom wall, spaced side and end walls and a handle structure interconnected with each side wall by partition panels is provided with reinforcing means af-

fixed to the bottom wall and to the adjacent portions of the side walls as well as to the handle and partition structure and the upper portions of the side and end walls so that each article receiving cell is reinforced at its bottom to take the weight of the article and is reinforced entirely about its upper portions so as to secure the article therein against any inadvertent rupture of the upper portion of the cell. The reinforcing strips are applied to the main blank by simply affixing a common center strip to the web of material from which the main blanks are formed, the bottom panels of the blanks being disposed in aligned relationship along the reinforced common reinforcing strip. Additional strips are arranged on either side of the common center strip and coincide with other portions of the blanks which are aligned with each other and which correspond to the handle, partition structure and the upper portions of the side and end walls.

3,766,838

CHARACTER CYLINDER FOR PHOTO-COMPOSING MACHINES

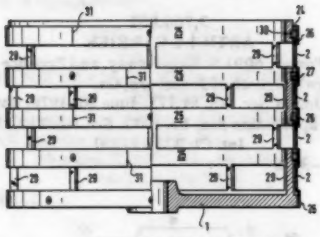
Alois Knoll, Buckschlag; Dietrich Mattern, Langen, and Hans-Werner Volcker, Frankfurt am Main, all of Germany, assignors to Linotype, G.m.b.H., Frankfurt am Main, Germany

Filed Sept. 8, 1970, Ser. No. 70,411

Claims priority, application Germany, Sept. 9, 1969, P 19 45 552.8

Int. Cl. B41b *15/12, 17/34*

U.S. Cl. 95—4.5 R **5 Claims**



The invention relates to a character drum for a photocomposing machine in which each character image is formed on a separate character carrier which is individually removable from the drum. Each character carrier in addition to the character image has formed thereon machine readable code markings that identify the character and indicate its width. Machine control code markings may also be provided. The character carrier may have more than one character image formed thereon, but if so, it will usually be a related character, e.g. the roman and itallic forms of a single character, that has a common identity but may have a different width.

3,766,839

SHUTTER OPERATING MECHANISM

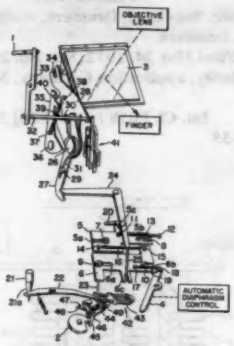
Motoyoshi Furusawa, and Seiji Asano, both of Ohmiya, Japan, assignors to Fuji Shashin Koki Kaubshiki Kaisha, Saitama-ken, Japan

Filed Oct. 6, 1970, Ser. No. 78,403

Claims priority, application Japan, Oct. 15, 1969, 44/98140

Int. Cl. G03b *27/52*

U.S. Cl. 95—42 **5 Claims**



A single lens reflex camera having a shutter timing circuit and a trigger switch therein which operates in response to the operation of a member for actuating a reflex mirror positioned within the light path.

3,766,840

ACTUATING AND CONTROL MECHANISM FOR ROTARY SECTOR SHUTTER

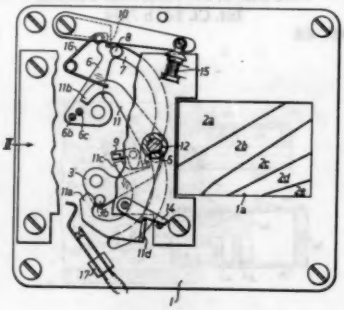
Peter Loseries, Diez, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany

Filed June 28, 1972, Ser. No. 267,228

Claims priority, application Germany, July 1, 1971, P 21 32 708.2

Int. Cl. G03b *9/36*

U.S. Cl. 95—60 **5 Claims**



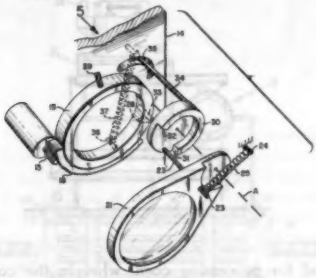
A camera shutter includes leading and lagging multi-sector blades. Each blade has a primary sector which executes a compound pivoting and sliding movement followed by a plurality of secondary sectors each of which pivots about a common axis. Cocking and triggering of each blade is accomplished by a pivoted crank. Each crank has a cam follower driven by a two armed pivoted lever which drives each blade to the cocked position. The lagging blade is released by an electromagnet actuated by an electronic timing circuit.

3,766,841

METHOD AND APPARATUS FOR EXTENDING THE EXPOSURE RANGE FOR CAMERA LENSES

Frank Henry Finnegan, Van Nuys; Karl Heinz Gensike, and Robert Clayton Marsh, both of Los Angeles, all of Calif., assignors to Dymat Photomatrix Corporation

Filed Dec. 1, 1972, Ser. No. 311,441
Int. Cl. G03b 9/02, 11/00
U.S. Cl. 95—64 R 3 Claims



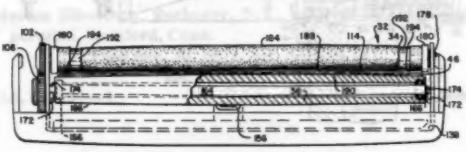
The exposure range of a camera lens is extended by positioning a light filter in front of the lens when the amount of light passing into the lens is greater than a given amount of light for which the lens stop would be set at its maximum limit. The filter functions to attenuate the light such that the lens may be set at a proper opening within the stop value range. The filter is removed from in front of the lens when the amount of light passing through the lens is less than a second given amount of light for which the lens stop would be set at its minimum limit. If the filter attenuates the light by at least three stops, the exposure range of the lens is effectively extended by at least three stops.

3,766,842

PHOTOGRAPHIC FILM PROCESSING APPARATUS

James M. Whall, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1972, Ser. No. 246,750
Int. Cl. G03d 9/02
U.S. Cl. 95—89 A 3 Claims



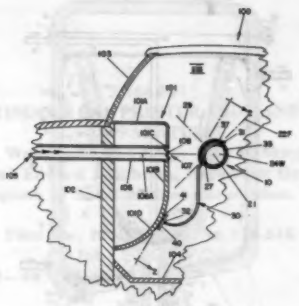
A film advancing-fluid spreading apparatus for use in camera systems of the self-developing type. A spread roller assembly comprises first and second rotatably mounted juxtaposed elongated rollers that are yieldably urged one towards the other. A pair of annular collars provided on the first roller define a minimum gap between the rollers to facilitate the initial introduction of a leading edge of a film unit therebetween. This first roller is adapted to be selectively driven by a motor of the camera system and, when so driven, its annular collars impart a rotary motion to the second roller. At least those portions of the two rollers adapted to contact one another are formed of a relatively low friction, impact resistant material, such as a stainless steel, while at least the sheet-contacting facing surface of the first roller is formed of a relatively high friction material such as urethane.

3,766,843

ADJUSTABLY POSITIONABLE DEFLECTOR FOR VENTED AIRSTREAM

Maurice R. Grier, 1122 S. 99th St., Omaha, Nebr.

Filed June 19, 1972, Ser. No. 264,140
Int. Cl. B60h 1/24
U.S. Cl. 98—2 R 11 Claims



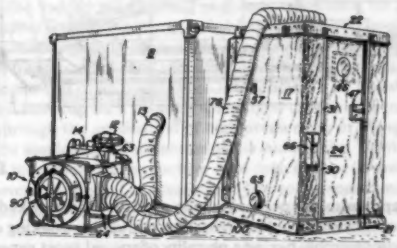
For the environment comprising a duct or conduit for a pressurized airstream, there is provided an adjustably positionable deflector positioned forwardly downstream of the outlet vent for re-directing the flowing air along a selected deflected-path. The deflector, which is especially desireable for use at an automobile dashboard panel, and adjacent to the air-conditioning vent, comprises an elongate baffle positioned forwardly of the duct vent and which is capable of re-directing the airstream, a foot member attachable to the dashboard panel remote of the vent, and an intervening elongate arm that is preferably manually stably deformable. The baffle, which is of generally elongate tubular form with two closeable ends and a generously longitudinally slotted sidewall, is desireably revolvable about the baffle-axis whereby the air-stream deflected-path is of increased selectivity.

3,766,844

PROTECTIVE SYSTEM FOR CONTAMINATED ATMOSPHERE

Thomas G. Donnelly, Minneapolis; James A. Haueter, Burnsville; William J. Krisko, Eden Prairie; Donald W. Schoen, Saint Paul, and Chester S. Lind, Bloomington, all of Minn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 21, 1971, Ser. No. 210,344
Int. Cl. F24f 13/00
U.S. Cl. 98—33 R 13 Claims



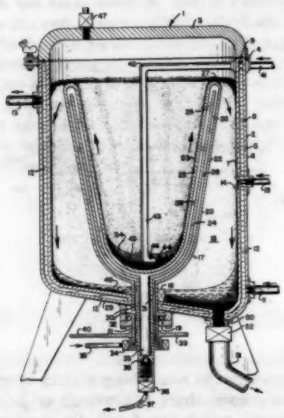
A system and method to provide protective shelter in contaminated atmosphere areas utilizing a protective shelter, a portable protective entrance, gas-particulate filter unit and associated components, pressure sensing network and associated components and controls, sliding-plate airflow valves, and a power distribution unit.

3,766,845

CENTRIFUGAL PROCESSING APPARATUS

John H. Amstad, 1359 Phelps Avenue, San Jose, Calif.

Filed Dec. 20, 1971, Ser. No. 210,040
Int. Cl. A23l 3/16
U.S. Cl. 99—324 8 Claims



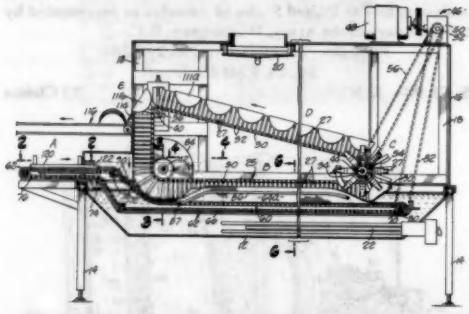
Apparatus for heat sensitive food processing includes a heater in the shape of a hollow inverted cone or bell adapted to spin on a vertical longitudinal axis within a pressure vessel having temperature controlled walls. Product to be processed is fed into the bottom of the bell and centrifugal force urges the product into a thin film as it travels up the sides. Product reaching the bell upper lip is thrown onto the container wall and the processed product is collected and withdrawn from the bottom of the vessel.

3,766,846

APPARATUS FOR PREPARING TACO SHELLS

James A. Jimenez, 6252 N. Hart, Temple City, Calif.

Filed Apr. 13, 1972, Ser. No. 243,733
Int. Cl. A47j 37/12; A21b 5/08
U.S. Cl. 99—353 14 Claims



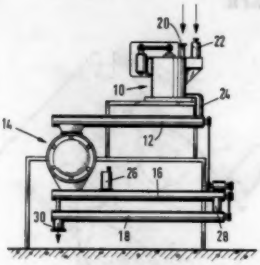
An apparatus for preparing taco shells from uncooked tortillas comprising a cooking vessel for containing cooking oil, a conveyor assembly having a plurality of spaced apart generally V-shaped rigid mold members for forming the tortillas and carrying them through the cooking vessel, and a supporting flexible belt-like member disposed proximate the conveyor for supporting the tortillas in juxtaposition with the mold members as the tortilla is moved through the cooking vessel. The conveyor system also includes a unique mechanism for removing the cooked tortillas from the cooking vessel after they have been suitably formed and cooked.

3,766,847

METHOD AND DEVICE FOR THE PROCESSING OF CORN FOR FEEDING PURPOSES

Leslie Palyi, Larabee Cres., Don Mills, Ontario, Canada

Filed July 16, 1971, Ser. No. 163,351
Int. Cl. A01f 12/44; A23n 17/00; A23b 9/00
U.S. Cl. 99—518 3 Claims



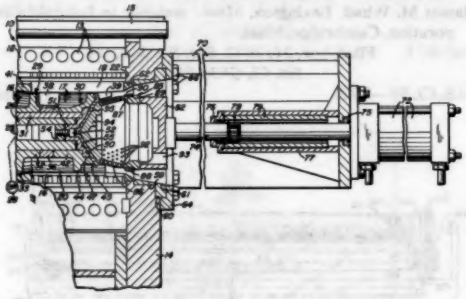
A method for processing corn, wherein the corn is first moistened to facilitate husk removal and then the husked corn is humidified to cause the kernels to absorb water. An apparatus for performing this method includes two separate humidifying stages and a conveyor therebetween for carrying the husked corn to the second stage.

3,766,848

MECHANICAL SCREW PRESS

Alfred W. French, and Forest J. Starrett, Jr., both of Piqua, Ohio, assignors to The French Oil Mill Machinery Company, Piqua, Ohio

Filed July 13, 1971, Ser. No. 162,175
Int. Cl. B30b 9/14, 9/18
U.S. Cl. 100—117 10 Claims



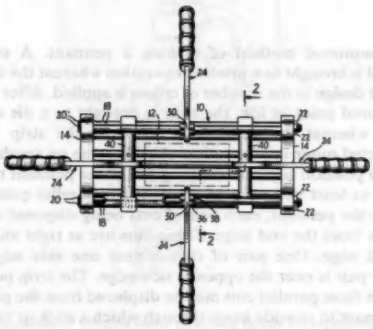
A cylindrical cage is lined with spaced screen bars to define a drainage chamber, a screw extends through the chamber and has a plurality of axially spaced worms mounted on a shaft, and axially spaced stationary breaker lugs project inwardly between the flights of the worms. The screw has a recessed conical end surface which mates with a pointed conical end surface of a stationary drainage discharge cone. The discharge cone is supported for axial adjustment by a bearing and a fluid cylinder to vary the size of the annular discharge orifice defined between an orifice ring removably mounted on the cone and a bushing mounted on the frame. The recessed conical surface of the worm and the pointed conical surface on the sleeve cooperate to center the discharge end portion of the screw within the pressing chamber through a layer of compacted material between the surfaces. Each of the worms may also incorporate two diametrically opposed helical flights each

extending circumferentially about 170° and which also cooperate to center the screw by balancing the lateral acting forces on the screw.

3,766,849
CAN CRUSHER

Eugene A. Maron, 2791 Bainbridge Ave., Bronx, N.Y.

Filed Aug. 14, 1972, Ser. No. 264,311
Int. Cl. A21d 2/00
U.S. Cl. 100—232 **9 Claims**

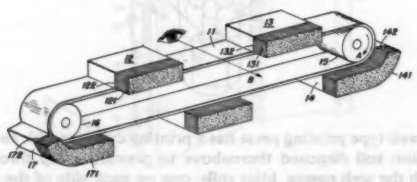


A device for crushing metal cans and other objects comprises a rectangular base and two pairs of pivotal lever arms. The lever arms of each pair rotate toward each other about parallel axes located along opposite sides of the base. In operation, a can is placed on its side in the base, the lever arms of one pair are brought together to flatten a zone across the cylindrical wall of the can, and the lever arms of the other pair are then rotated against the ends of the can to complete the crushing operation.

3,766,850
DEVELOPING MEANS FOR ELECTROSTATIC PRINTING APPARATUS

Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1971, Ser. No. 214,111
Int. Cl. B05b 5/00
U.S. Cl. 101—1 **5 Claims**

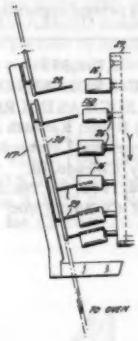


Printing apparatus is disclosed in accordance with the teachings of the present invention wherein a plurality of applicators capable of retaining electrostatic developer particles are mounted in spaced relationship on movable support means such that said applicators sequentially contact an electrostatic latent image to deposit said electrostatic developer particles thereon. In an exemplary embodiment of the present invention the movable support means comprises an endless belt movable about a plurality of cylinder means.

3,766,851
CONTINUOUS CAN PRINTER AND HANDLING APPARATUS

Enn Sirvet, Washington Township; John P. Skrypek, Saddle Brook, and Edward J. Whelan, Hasbrouck Heights, all of N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Nov. 15, 1971, Ser. No. 198,618
Int. Cl. B41f 17/20
U.S. Cl. 101—40 **12 Claims**



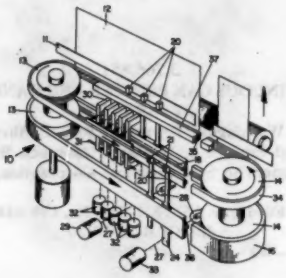
A continuous can printer is constructed with a worm and star-wheel type input conveyor which delivers undecorated cans to cradles mounted along the periphery of a rotating carrier. The loaded cradles move axially to transfer the cans to horizontal spindles mounted on the same carrier and thereafter suction is applied to firmly seat cans on the spindles. The loaded spindles are positively controlled for radial movement whereby improperly loaded cans are positioned for ejection and properly loaded cans are positioned to engage the image transfer blanket of a printing unit, thereafter engage the applicator roll of an overvarnish unit, and then be transferred to a suction cup on a rotating wheel-type carrier of a transfer unit through the application of high pressure air at the spindle and the application of a vacuum at the suction cup. Controlled radial movement of the suction cups matches speed and path of movement thereof at a transfer region to the speed and path of pins on a conveyor chain that extends through a curing oven. At the transfer region the conveyor chain moves along an inclined path while the transfer carrier rotates on a horizontal axis so that in the transfer region the conveyor pins move toward the transfer carrier to enter cans carried by the suction cups. In the transfer region controlled axial movement of the suction cups gradually displaces them toward the conveyor pins. At the outfeed end of the transfer region each conveyor pin is entered well into a can and this can falls free of its holding suction cup when the vacuum thereat is released.

3,766,852

REBOUND MOTION CONTROLLING APPARATUS

Seymour M. DePuy; William J. Folsom, and John R. Bittner, all of Waynesboro, Va., assignors to General Electric Company, Waynesboro, Va.

Filed May 15, 1972, Ser. No. 252,987
Int. Cl. B41j *1/20*
U.S. Cl. 101—93 C 18 Claims



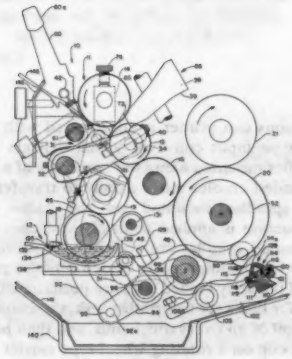
Use of a moving rebound belt arrangement with various features to control rebound motion of type bearing fingers carried by a moving belt in a printer apparatus.

3,766,853

SYSTEM FOR CLEANING ROLLERS OF A DUPLICATING MACHINE, SUCH AS INK ROLLERS

John P. Gallagher, Park Ridge; Kenneth J. Tonkin, Glenview, and Lawrence A. Borneman, Lombard, all of Ill., assignors to A. B. Dick Company, Chicago, Ill.

Filed Apr. 4, 1972, Ser. No. 241,024
Int. Cl. B41f *35/06*
U.S. Cl. 101—113 9 Claims



The invention relates to a system for cleaning rollers in an offset duplicating machine, for example the inking rollers, which includes a lever having a normal operating mode and a clean-up mode, while in the latter mode the lever being effective: (1) to operate an eccentric support and a bearing mount to bring an ink fountain roller and an ink ductor roller into continuous contact with the remaining rollers in the system; (2) to dispense cleaning fluid to the inking system rollers; (3) to remove contaminants from the inking system rollers by engaging a scraper assembly; and (4) to turn off the repellent supply and empty the repellent fountain.

3,766,854

METHOD OF MAKING A PENNANT

Ted Scarlet, 101 Lilac Ln., Bergenfield, N.J.

Filed Mar. 22, 1972, Ser. No. 236,931
Int. Cl. B41f *17/00*
U.S. Cl. 101—426 5 Claims

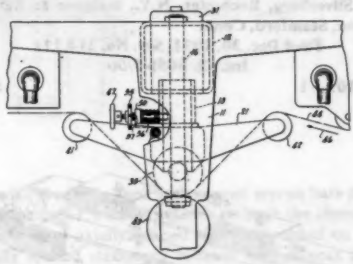
An improved method of making a pennant. A strip of material is brought to a printing operation whereat the desired pennant design in the number of colors is applied. After drying the colored paint or ink, the strip is brought to a die cutting station whereat the pennant is cut from the strip to the preselected outer configuration. At this same or another station at a position adjacent the long end of the pennant there is formed at least two pairs of substantially parallel cuts made through the pennant, each pair of cuts being disposed a short distance from the end edge. These cuts are at right angles to this end edge. One pair of cuts is near one side edge and another pair is near the opposite side edge. The strip portions between these parallel cuts may be displaced from the plane of the pennant to provide loops through which a stick or rod may be inserted for carrying and displaying the pennant in the usual manner. A short distance in from the long end and on or substantially on the center line of the pennant there is provided a small X-cut through the material which permits the pennant to be displayed on a small pin or rod prior to its sale. At the time of sale any displacement of the fabric around this X-cut and occurring because of its mounting on a nail may be, and usually is, pushed back into the plane of the pennant.

3,766,855

SKEW ADJUSTING MEANS FOR PRINTING PRESS IMPRESSION ROLL

David R. Hardt, Milwaukee, Wis., assignor to Faustel, Inc., Butler, Wis.

Filed May 30, 1972, Ser. No. 257,765
Int. Cl. B41f *13/14, 13/24*
U.S. Cl. 101—219 9 Claims



A web type printing press has a printing cylinder with an impression roll disposed thereabove to provide a nip through which the web passes. Idler rolls, one on each side of the nip, guide the web, tension it and effect its curvature around a portion of the impression roll. The axes of the printing cylinder, the idler rolls and the impression roll are normally parallel. Copy laydown skew adjustment means are provided to move the impression roll to change the angle between its axis and that of the printing cylinder to thereby alter the disposition of the web with respect to the surface of the printing cylinder.

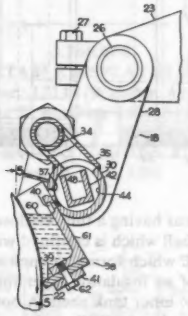
This adjustment means compensates for printing errors which would otherwise result from engraving or etching being improperly laid down (i.e., skewed) on the printing cylinder.

3,766,856

INK APPLICATOR MEANS FOR PRINTING PRESS

David R. Hardt, Milwaukee, Wis., assignor to Faustel, Inc., Butler, Wis.

Filed May 30, 1972, Ser. No. 257,516
Int. Cl. B41f *31/06, 9/10*
U.S. Cl. 101—366 8 Claims



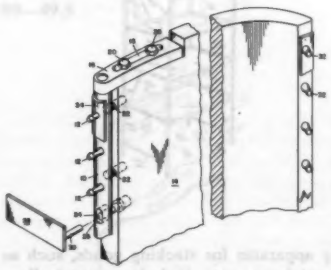
Ink applicator means for a printing press for applying liquid ink to a roll therein comprises a hollow cylindrical tube adjacent the roll and having a chamber therein. The tube has a longitudinal slit in one side thereof communicating with the chamber and ink inlet ports for communication with the chamber. A longitudinal member of rectangular cross-section is axially disposed within the tube chamber, and cooperates with the interior wall of the chamber to define metering orifices which control passage of ink from the ports to the slit. The longitudinal member is provided with depressions in one surface thereof which extend from a location in the vicinity of the inlet ports along the longitudinal member to equalize fluid pressure in the tube.

3,766,857

SADDLE LOCK-UP FOR FLEXIBLE PRINTING PLATES

Hugo Schlatter, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Oct. 17, 1972, Ser. No. 298,210
Int. Cl. B41f *27/12, 27/14*
U.S. Cl. 101—415.1 5 Claims



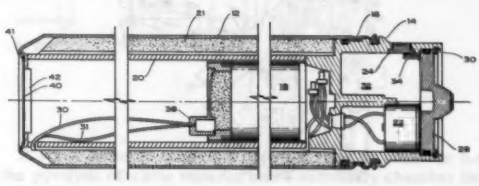
The invention is a flexible printing plate saddle lock-up which is operable either on-press or off-press and which provides means to maintain tension in the flexible plate to prevent shifting and buckling of the plate which would result in poor print quality. The saddle lock-up has a rotatable securing bar to which the flexible plate is attached, said rotatable bar being spring biased to uniformly tension said plate, said rotatable bar being secured in locked position by a spring loaded pin and complimentary opening in said bar.

3,766,858

DECOY FLARE

George S. Handler, and Michael Mamula, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 26, 1971, Ser. No. 202,696
Int. Cl. F42b *13/38;* C06d *1/10*
U.S. Cl. 102—37.8 2 Claims



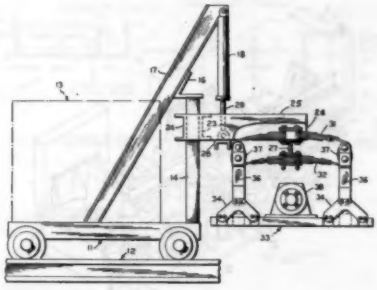
A safety flare for sea going craft which is designed to be stored in a SAFE or UNARMED condition and which may be placed in an ARMED position by rotating a base member. Actuation of the flare is possible only after sea water has entered the base member and activated the battery.

3,766,859

RAIL VIBRATING MACHINE

Melvin E. Byrne, 1173 S. 21st East, Salt Lake City, Utah

Filed Jan. 3, 1972, Ser. No. 214,756
Int. Cl. E01b *29/16*
U.S. Cl. 104—1 4 Claims



A machine to vibrate railroad rail includes a vehicle movable along the rail and supporting a spring-loaded vibratory shoe which engages the upper surface of the rail. The spring loading may be adjusted to control the intensity of the vibration imparted to the rail.

3,766,860

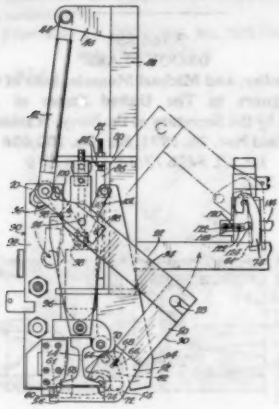
RAIL ANCHOR SETTER AND APPLICATOR

William P. McIlrath, Racine, Wis., assignor to Racing Railroad Products, Inc., Racine, Wis.

Filed Sept. 9, 1971, Ser. No. 178,858
Int. Cl. E01b *29/32*
U.S. Cl. 104—17 A 7 Claims

A combination rail anchor setter and applicator. Disclosed is an apparatus adapted for travel on a railroad right-of-way

for applying rail anchors to a rail on one or both sides of a tie and thereafter finally applying the anchor to the rail. The apparatus includes cooperating setting and applicating arms, the



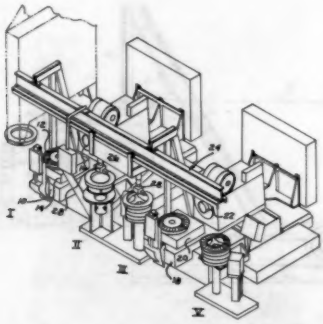
former being provided with a quick-change connection to enable easy adaptation for anchors of differing shapes and a vertically adjustable loader to enable easy adaptation to rails of differing vertical dimensions.

3,766,861

SYSTEM FOR HANDLING AND CONVEYING RELATIVELY LARGE WORKPIECES OR OTHER OBJECTS

John L. Ash, II, Pittsford, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Oct. 4, 1971, Ser. No. 185,977
Int. Cl. B61b *3/00*
U.S. Cl. 104—91 **10 Claims**



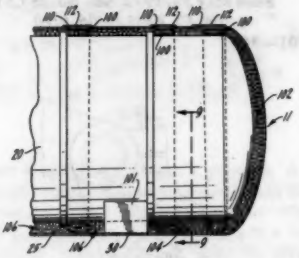
A system for loading and unloading workpieces to and from gear cutting machines includes an overhead handling and conveying system capable of carrying relatively heavy loads along a longitudinal axis of movement and having means for guiding the loads to adjusted positions perpendicular to the longitudinal axis of movement. The overhead conveyor system includes a fixed overhead rail means for carrying the load of a carriage frame means suspended therefrom with a retained workpiece or other object. In addition, there is a guide track means suspended from said overhead rail, and the guide track can be adjusted in directions generally perpendicular to the main longitudinal axis of the overhead rail. The system provides for a transverse shifting of relatively heavy loads suspended from the overhead rail without any requirement for an adjustment in position of the load-carrying overhead rail itself.

3,766,862

RAILROAD TANK CAR

James C. Heap, Munster; Fred Brown, Hammond, both of Ind., and Donald C. Graves, Frankfort, Mich., assignors to Union Tank Car Company, Chicago, Ill.

Filed Oct. 21, 1971, Ser. No. 191,272
Int. Cl. B61d *5/00*
U.S. Cl. 105—358 **25 Claims**



A railroad tank car having a fully enclosed commodity confining inner tank shell which is confined within an outer "thin skinned" tank shell which forms an enclosure for and effects the confinement of an insulating layer that substantially entirely surrounds the inner tank shell. A bottom section of the outer shell is removed and a "Z" section center sill is inserted and integrally welded to the outer shell so as to effect the necessary support therefor and to achieve a stronger and lighter tank shell having sufficient buckling resistance. Reinforcing members are provided at the upper and lower flanges of the sill. The bolster assemblies includes a saddle plate which is inset and overlaps a corresponding removed portion of the lower sides of the outer shell. The density of the insulating material adjacent the bolster assemblies is increased so as to adequately support the inner shell.

3,766,863

DISPLAY APPARATUS

George E. Swick, Jr., Edina, and Ellsworth H. Danielson, St. Paul, both of Minn., assignors to The Cornelius Company, Minneapolis, Minn.

Filed Mar. 31, 1972, Ser. No. 242,878
Int. Cl. A47b *3/06*
U.S. Cl. 108—111 **3 Claims**

A display apparatus for stacking goods, such as cartons, beverage containers, etc., includes a vertically extending frame that is defined by two vertical side structures having a plurality of generally horizontal support members. The two side structures are interconnected by bracing means, and a plurality of shelves extend between the two vertical side structures to accomodate stacked goods. Each shelf is generally rectangular in plan form, with the corners thereof being cut off so that the edge portions of the shelf may be folded. Two edge

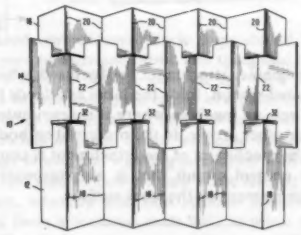
portions are adapted to be mounted on the horizontal support means, with each edge portion being folded about three generally parallel lines so as to form a U-shaped clip portion substantially corresponding to the cross-section of the associated horizontal support members. The clip portions of the shelf are snapped into place onto the horizontal support members. The other two opposed side edge portions are folded about two generally parallel lines so as to form reinforcing beam members to provide additional rigidity to the span of the shelf structure, and to provide a surface for pricing or labeling. Assembly and disassembly of the display apparatus may be readily accomplished in a very short period of time, since there is no requirement for bolting each shelf to the frame structure.

3,766,864

PORTABLE DISPLAY STAND

Lawrence Dee Baker, 13118 Whistler Ave., Granada Hills, Calif., and George E. Bamber, 3836 Altura, La Crescenta, Calif.

Filed July 27, 1972, Ser. No. 275,673
Int. Cl. A47b *3/00*
U.S. Cl. 108—111 **3 Claims**



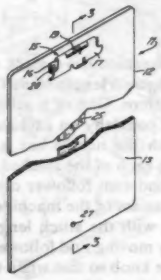
A portable display stand is comprised of three interfitting vertically extending folded panels. Each panel is provided with a plurality of alternately directed vertical folds with the folds of the intermediate panel being alternately directed relative to the folds of the top and bottom panels. Suitable interfitting notches are provided in the adjacent edges of the panels for securing the same together in an interfitting manner. Horizontal shelves are mounted on the upper edges of the bottom folded panel.

3,766,865

PROTECTIVE SHIELD DEVICE

Murray J. Cutler, 31 N. Annapolis Ave., Atlantic City, N.J.

Filed Nov. 16, 1971, Ser. No. 199,274
Int. Cl. F41h *5/08*
U.S. Cl. 109—49.5 **3 Claims**



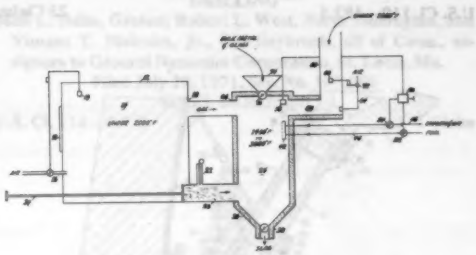
A penetration resistant panel, paper-holding means on one side of the panel, and handgrip means on the other panel side.

3,766,866

THERMAL WASTE CONVERTER

Eugene D. Krumm, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Mar. 13, 1972, Ser. No. 234,093
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 R **7 Claims**



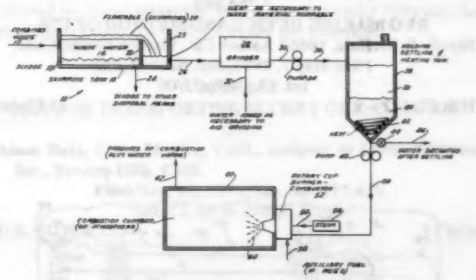
A waste material converter having a primary chamber for the pyrolysis of waste material and a secondary chamber for the combustion of pyrolyzed gas and airborne combustible matter that is generated in the primary combustion chamber. The secondary combustion chamber also serves as a high temperature slagging furnace for the reduction of solid residual wastes from the primary combustion chamber using heat of the pyrolyzed gas.

3,766,867

BURNING APPARATUS AND METHOD

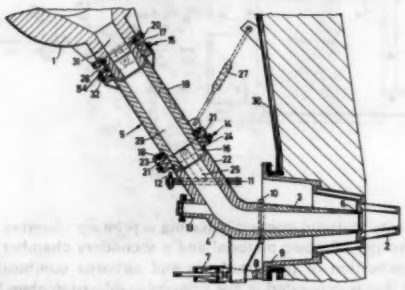
George G. DeAngelis, Ridgefield, Conn., assignor to Preferred Utilities Manufacturing Corporation, Danbury, Conn.

Filed Dec. 27, 1971, Ser. No. 212,285
Int. Cl. F23g *7/00*
U.S. Cl. 110—8 R **15 Claims**



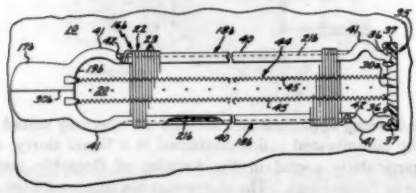
The burning apparatus and method are specially suited for burning comminuted solids contained in a liquid slurry, and are particularly useful in the burning of floatable wastes known as "skimmings." The skimmings are removed from the surface of a liquid in a skimming tank for sewage or other wastes. The skimmings are then sent through a grinder to grind up the solid floatable wastes, and mixed with water, if necessary. The resulting slurry is pumped to a holding and settling tank, where the water and floatables are allowed to separate from one another. The water is decanted off, and the skimmings are heated and delivered to a rotary-cup type burner with enlarged liquid flow passages. Steam is fed into the slurry before it is atomized, and the atomization product is ignited and burned. Supplementary fuel can be added to the slurry-steam mixture, if necessary. Preferably, a combustion chamber is used to help support combustion. After the chamber has been heated, the slurry can be burned without supplementary fuel.

3,766,868
TUYERE STOCK FOR FURNACES
Rene N. Mahr, Grand Duchy of Luxembourg, assignor to S.A. Des Anciens Etablissements Paul Warth Grand Duchy of Luxembourg
Continuation of Ser. No. 30,178, April 20, 1970, abandoned. This application Feb. 22, 1972, Ser. No. 228,417
Int. Cl. F23l *1/00*
U.S. Cl. 110—182.5 23 Claims



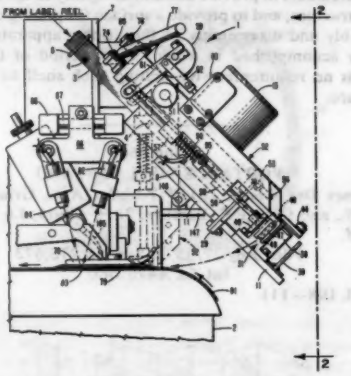
A feed conduit having utility in the transmission of heated fluids is disclosed. The apparatus of the present invention is characterized by a curved section, which communicates at its discharge end with a nozzle which supplies the heated fluid to the desired environment, and by a straight portion, which couples the source of heated fluid to the curved portion; the straight portion being formed from at least three members with an intermediate member being connected to the end members by means of articulated joints comprised of cardan compensators.

3,766,869
RUG MAKING DEVICE AND METHOD OF USE
Myrtle B. McHale, 10662 Amber Cir., Garden Grove, Calif.
Filed May 7, 1971, Ser. No. 141,223
Int. Cl. D05b *23/00*
U.S. Cl. 112—9 11 Claims



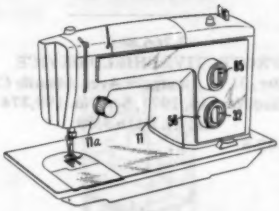
The present invention relates to an improved rug, and to the means for making such a rug. The disclosed rug making device has a configuration that comprises a window; and winding a rug yarn helically around the device causes the individual turns of the rug yarn to span the window in a transverse direction. The central portion of the individual turns of the rug yarn are then sewn to a rug base; and the individual turns are then cut at a cutting guide of the device. The result is plurality of strands of rug yarn that have their mid-points affixed to the rug base; and have the free ends fluffed out from the rug base, to form the finished rug.

3,766,870
SEWING MACHINE ATTACHMENT
Karl Weigert, Englishtown, N.J., assignor to Reliable Attachment Company, New York, N.Y.
Filed Sept. 6, 1972, Ser. No. 286,747
Int. Cl. D05b *3/12*
U.S. Cl. 112—104 15 Claims



A sewing machine attachment is disclosed which cuts a label from a label ribbon, folds the label and feeds the folded label into the sewing machine where it is sewn automatically to a garment or other article. In the preferred embodiment the operation of the mechanics of the attachment is controlled by an electronic control circuit that is also responsive to the presence of the garment on the work surface.

3,766,871
ZIG ZAG SEWING MACHINE
Kimikazu Mastuda, and Teichi Nishigami, both of Moriguchi City, Osaka, Japan, assignors to Maruzen Sewing Machine Co., Ltd., Moriguchi City, Osaka, Japan
Filed July 7, 1972, Ser. No. 269,711
Int. Cl. D05b *3/04*
U.S. Cl. 112—210 5 Claims



A zig zag sewing machine has a stack of built-in cams, one of which controls the stitch length while the remainder control the zig zag stitch pattern. One of a series of drop-in cams is removably mounted coaxially on said stack. A first cam follower connected with the needle bar is selectively movable into registration with each of the stacked zig zag cams and the drop-in cam. A second cam follower connected to the stitch length control mechanism of the machine is selectively movable into registration with the stitch length control cam. The means for selectively moving said followers are integrated and controlled by a single knob so that when the first cam follower is moved into registration with any one of the zig zag cams in the stack, the second cam follower is disposed in registration with the stitch length control cam and, when the first cam follower is moved into registration with the drop-in cam, the

second cam follower is automatically moved out of registration with the stitch length control cam to render the operation thereof ineffective. A third cam follower connected to the second cam follower is disposed in registration with the drop-in cam and is arranged to control the stitch length when the built-in stitch length cam is rendered ineffective.

3,766,872

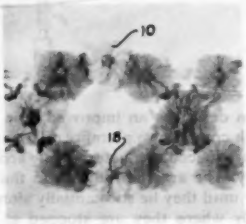
TEXTURED EMBROIDERED FABRIC

David Krieger, c/o Emb-Tex Corporation, Greenville, S.C.

Filed May 11, 1972, Ser. No. 252,384

Int. Cl. D05c *17/00*

U.S. Cl. 112—439 **5 Claims**



A textured embroidered fabric is produced by stitching a first face yarn to a ground fabric and tying said first stitches in place by a soluble bobbin yarn on the back of said fabric, stitching a second face yarn fabric in a pattern which at least in part overlies the stitches of said first face yarn and tying said second stitches in place by an insoluble bobbin yarn on the back of said fabric, and washing said fabric with a liquid which dissolves said soluble bobbin yarn while leaving said insoluble yarn intact, whereby said first stitches are freed from said fabric and form a textured mass held in place relative to the fabric by the stitches of the second face yarn where they overlay the first stitches. Preferably, the first face yarn comprises continuous filament polyester of low twist and high heat shrinkage and the soluble yarn is polyvinyl alcohol, its dissolution being effected by boiling water. The ground fabric preferably comprises a polyester-cotton blend and, after dissolution of the polyvinyl alcohol, is padded with a permanent-press finish and oven cured, the cure serving to set the finish, shrink the polyester and dry the fabric. The fabric may then be brushed to help raise loops of the first face yarns.

3,766,873

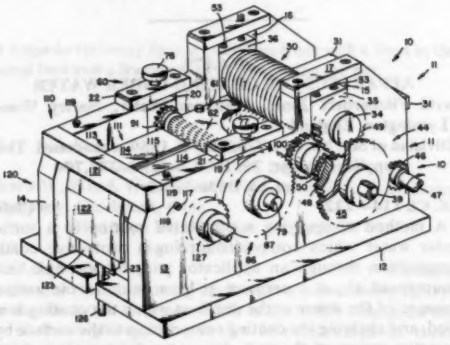
METAL PLEATING MACHINE

Anthony Narog, 9902 Stonybrook Dr., Anaheim, Calif.

Filed Apr. 5, 1971, Ser. No. 131,031

Int. Cl. B21d *53/04*

U.S. Cl. 113—1 C **1 Claim**



A pleating machine for metal strips having a set of rotary dies and drive gears therefor, a set of rotary folders and drive gears therefor and a floating idler gear connecting the rotary dies drive gears and rotary folders drive gears so as to permit the rotation of the rotary folders relative to the rotary dies without disassembling the machine.

3,766,874

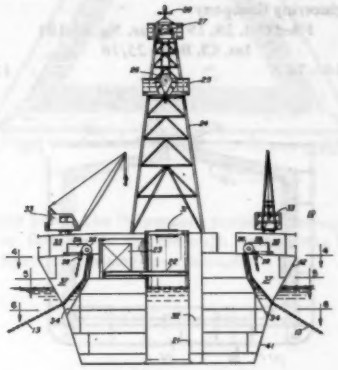
MOORED BARGE FOR ARCTIC OFFSHORE OIL DRILLING

John L. Helm, Groton; Robert L. West, North Stonington, and Vincent T. Malcolm, Jr., Old Saybrook, all of Conn., assignors to General Dynamics Corporation, St. Louis, Mo.

Filed July 29, 1971, Ser. No. 167,296

Int. Cl. B63b *35/08*

U.S. Cl. 114—0.5 D **1 Claim**



A barge is provided for offshore oil drilling in Arctic waters. The barge is formed of two frusto-conical sections (with the points of the extended cones being pointed downward) with the lower section being steeper than the upper section. The angle of the upper cone serves to break ice impinging on the hull by riding up and breaking ice in bending. The hull is moored by lines connected at the line of joinder between the two conical sections, which is below the waterline.

3,766,875

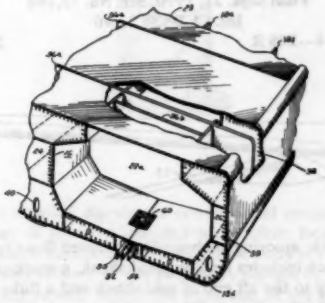
SHIP FOR TRANSPORTING SLURRY ORE, COAL AND OIL

Amos Baki, Santa Monica, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Nov. 10, 1971, Ser. No. 197,439

Int. Cl. B63b *25/02, 25/08*

U.S. Cl. 114—73 **1 Claim**



A ship for the marine transportation of slurry ore, slurry coal and oil is equipped with an inner shell spaced within the hull and at least one cofferdam longitudinal bulkhead within

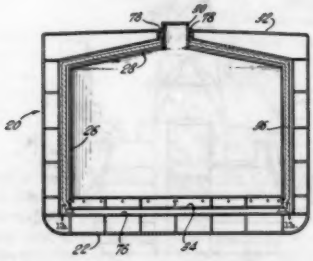
the inner shell. In a preferred embodiment the cofferdam is a continuous longitudinal cofferdam dividing the cross section of the inner shell into a plurality of port and starboard smooth bulkhead cargo carrying tanks and a plurality of transverse bulkheads including a number of transverse cofferdam bulkheads divide the cargo space into a number of cargo carrying tanks. In the preferred embodiment a fluid cargo such as oil may be carried in tanks within the longitudinal cofferdam bulkhead and in port and starboard tanks between the inner shell and the hull of the ship.

3,766,876

CONTAINER FOR LIQUEFIED GASES AT CRYOGENIC TEMPERATURES

Walter C. Cowles, Stamford, Conn., assignor to Esso Research and Engineering Company

Filed Oct. 29, 1970, Ser. No. 85,101
Int. Cl. B63b *25/16*
U.S. Cl. 114—74 A **11 Claims**



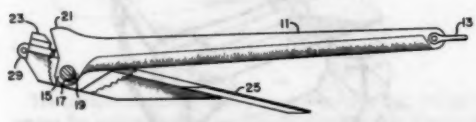
A device is provided for containing liquefied gases at cryogenic temperatures in a tanker vessel. The container device includes a primary tank for containing the liquefied gas and a drip pan formed as an integral part of and below the primary tank for collecting and retaining quantities of the liquefied gas that may leak through the primary tank and for providing support for the primary tank. A spray shield acting as a liquid tight barrier is spaced apart from and structurally supported by the primary tank. The drip pan includes a plurality of apertures in fluid communication with the space between the primary tank and the spray shield for enabling the passage of seepage from upper portions of the primary tank through the space and into the drip pan.

3,766,877

MOORING ANCHOR

Robert W. Beck, Houston, Tex., assignor to Esso Production Research Company, Houston, Tex.

Filed Sept. 21, 1970, Ser. No. 73,798
Int. Cl. B63b *21/40*
U.S. Cl. 114—208 R **21 Claims**



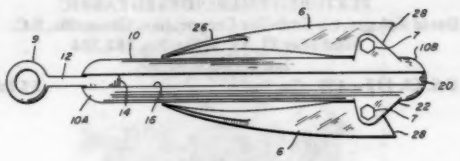
A dynamic mooring anchor of the pivoted fluke type is disclosed which includes an elongated shank, a stock connected transversely to the aft end of said shank and a fluke pivotally connected to the aft end of the shank to pivot below the shank between a first minimum angular position and a second maximum angular position relative to the shank. The shank, fluke and stock have surfaces which are substantially free of obstructions to the flow of bottom soil thereover.

3,766,878

FOLD UP RETRIEVABLE ANCHOR

Ralph L. Hogue, R.R. 3, Box 14AB, Wagoner, Okla.

Filed Nov. 20, 1972, Ser. No. 307,879
Int. Cl. B63b *21/44*
U.S. Cl. 114—208 R **5 Claims**



This invention describes an improved type of anchor for small craft which comprises a plurality of arms with flukes on the end. These are spaced circumferentially around a cylindrical tubular body. The arms are hinged so that they may be moved inwardly until they lie substantially along the body, or pulled outwardly where they are stopped at a preselected angle and serve as spades or flukes to dig into the sea floor. The body comprises a tubular member which has a longitudinal slot throughout its length and is closed at each end. The support member to which the anchor cable is attached, comprises a rod which has an eye at one end, to which the anchor cable is attached. At the other end is a spherical ball which is of diameter slightly less than the inner diameter of the cylindrical body. The ball is inserted into the tube with the rod fitting into the slot so that the eye extends to the outside. The ends of the cylinder are then closed, as by brazing or welding, so that the ball is locked inside of the tubular body.

The plurality of flukes are arranged unsymmetrically so that on the side of the body corresponding to the position of the slot there are fewer flukes than on the opposite side. When the anchor is lowered by cable the support member will be at the end of the body opposite to which the flukes are attached. As the anchor is lowered it will rest on its bottom tip and the weight of the flukes will cause it to tilt in a direction opposite to that of the slot. With the anchor resting on two of the flukes, if the cable is pulled to the side, they will dig into the sand and mud until the anchor resists further movement. If it should happen that the fluke digs in under a rock or other obstacle, such that it is difficult to pull the anchor out simply by lifting the cable, then the direction of pull on the cable is reversed. This causes the ball to slide to the opposite end of the anchor body and by pulling in that direction the fluke is pulled out of the mud in the opposite direction to which it went in, and can be removed without difficulty.

3,766,879

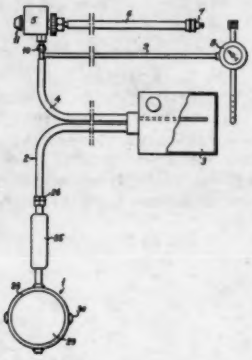
APPARATUS FOR COATING UNDER WATER

David Fitzherbert Jones, Plummer Water, Narley Woods, Lymington, England

Division of Ser. No. 821,776, May 5, 1969, abandoned. This application Apr. 26, 1972, Ser. No. 247,704
Int. Cl. B63b *59/00*
U.S. Cl. 114—222 **9 Claims**

A method of applying a protective coating to a surface under water which comprises forcing a protective coating composition through an applicator pad, for example using compreseed air, at a pressure at least equal to the ambient pressure of the water at the depth at which the coating is applied, and applying the coating composition to the surface by a smearing action of the pad. Apparatus for carrying out the method includes a porous applicator pad, a reservoir for a protective coating composition to be supplied to the applicator pad, a sensing device for sensing the ambient water pressure,

and a control device operative to maintain the pressure at which the composition is supplied to the applicator pad at least equal to the sensed pressure. The applicator pad may be a layer of foamed plastics material having an open interconnected cellular structure.



3,766,880

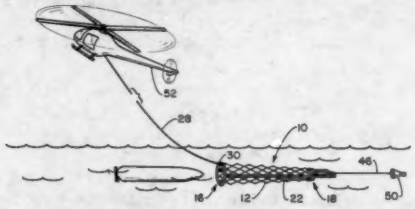
TORPEDO RECOVERY DEVICE

William R. Ramsey, 3725 Festival Court, Chula Vista, Calif.; Phillip B. West, 557 Lavander Lane, Norfolk, Va.; Charles E. Fields, 108A S. Sparrow Dr., and Robert E. Smith, 113A S. Sparrow Dr., both of Barking Sands, Kauai, Hawaii

Filed May 26, 1972, Ser. No. 257,129

Int. Cl. B63g *9/04*

U.S. Cl. 114—241 **4 Claims**



A torpedo recovery device including a net with a float in the tapered foot and a framework for supporting the net.

3,766,881

TRAFFIC WARNING DEVICE

Richard W. Ward, Westchester, Ohio, assignor to K. D. Lamp Company, Cincinnati, Ohio

Filed Mar. 29, 1973, Ser. No. 345,857

Int. Cl. E01f *9/10*

U.S. Cl. 116—63 P **8 Claims**

A portable traffic warning device to warn oncoming drivers of an accident or a stopped vehicle in the traffic lane or on the side of the highway. The device is constructed of three pivotally joined elongated members with an integrally formed and pivotally attached stand, the elongated members and stand being foldable for compact storage. Each elongated member includes a light reflecting portion and a fluorescent portion. The reflective portion preferably comprises a retroreflector member while the fluorescent portion comprises a surface coated with a fluorescent material, such as a fluorescent paint. The fluorescent portion is louvered to permit air to flow freely therethrough while being shaped to prevent light from passing therethrough.

3,766,882

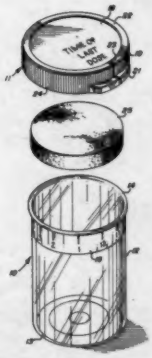
DOSAGE TIME INDICATOR CONTAINER

Dean R. Babbitt, III, Evanston, Ill.

Filed Apr. 21, 1972, Ser. No. 246,325

Int. Cl. A61j *1/00*

U.S. Cl. 116—121 **5 Claims**



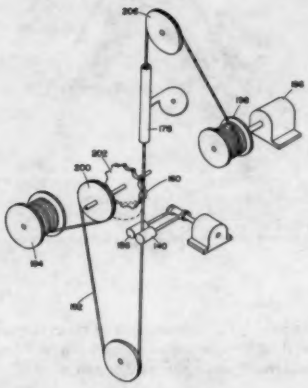
This specification discloses a conventional container from which doses of pills are intended to be taken from time to time, and which container includes a main body portion and a cap removably secured on the main body portion by a snap action fastening device. About the open end of the main body portion is a scale indicating hours and inscribed on the cap is a line which cooperates with this scale. A foam plastic pad is secured to the underside of the cap and cooperates with the upper end of the main body portion to hold the cap in an angularly adjusted position thereon.

3,766,883

MACHINE FOR CIRCUMFERENTIAL COLOR CODING WIRE

Ralph H. Swaisgood, Fort Collins, Colo., assignor to Storm Products Company, Los Angeles, Calif.

Filed July 2, 1970, Ser. No. 51,815
Int. Cl. B05c *1/08, 1/16, 11/26*
U.S. Cl. 118—44 5 Claims



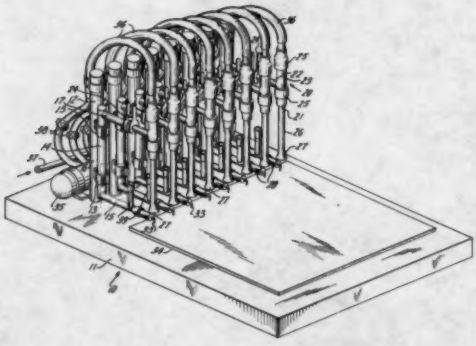
A wire coding machine wherein the wire is moved along a path while being rotated about its axis in contact with an ink carrier moving at the same lineal speed as the wire so as to apply a circumferential ink band around the wire at the area of contact with the ink carrier.

3,766,884

APPARATUS FOR SAMPLE APPLICATION IN THIN LAYER AND PAPER CHROMATOGRAPHY

Arthur Rosenthal, New Hyde Park, N.Y., assignor to The Long Island Jewish Medical Center, New Hyde Park, N.Y.

Filed June 28, 1971, Ser. No. 157,117
Int. Cl. B05c *11/00*
U.S. Cl. 118—58 24 Claims



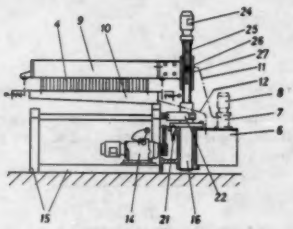
An apparatus for producing spots of specimens of material on a plate having a thin layer adsorbing surface, the specimens being dissolved in a diluting solvent for chromatographic analysis, with a plurality of units, each one of the units comprising a glass tube which is filled with a specimen through a funnel-like glass filling tube projecting perpendicularly from the upper surface of the specimen tube, the latter also having an open front and which is stoppered or otherwise covered by a teflon or other inert plug through which passes a capillary tube, the capillary tube having a bent front end protruding from the open front end of the glass tube so that the end of the capillary is very close to the adsorbing surface of the plate, and an air tube above the front end of the capillary which may be adjustably set to blow a low-pressure air stream onto the specimen emanating from the capillary to evaporate the solvent, thereby forming a spot of the specimen on the thin-layer adsorbing surface of the plate.

3,766,885

MACHINE FOR THE APPLICATION OF LIQUID COATINGS TO WORKPIECES

Siegfried Brenner, Hartranfstr. 10, and Erwin Muz, Karntner Str., 50, both of 7290 Freudenstadt, Germany

Filed Sept. 14, 1971, Ser. No. 180,343
Claims priority, application Germany, Mar. 4, 1971, P 21 10 255.6
Int. Cl. B05c *5/00*
U.S. Cl. 118—313 10 Claims



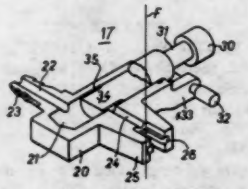
A coating machine where liquid coatings of lacquer or glue are applied to continuous webs or to a succession of flat workpieces in a free-falling liquid curtain emanating from an applicator head positioned over the workpiece conveyor, the machine including a rotatable vertical column with two carrying arms at right angles and a complete independent liquid circulation system for each applicator head, the applicator heads and liquid circulation systems being rotatable together with the vertical column so that, when one arm and applicator head is in the operation position above the conveyor line, the other arm and applicator head is positioned alongside the conveyor line.

3,766,886

YARN SPOOLING MACHINE WITH YARN LUBRICATING DEVICE

Alois Perberschlager, Zurich, Switzerland, assignor to Maschinenfabrik Schweiter AG, Horgen, Switzerland

Filed Aug. 9, 1972, Ser. No. 278,999
Claims priority, application Switzerland, Aug. 26, 1971, 12621/71
Int. Cl. B05c *1/00*
U.S. Cl. 118—420 9 Claims



The yarn is guided in a predetermined path past a cylinder housing having a thread guiding groove or notch. A lubricating fluid inlet opening to provide lubricating fluid when synthetic yarns are being spooled, is provided for the cylinder.

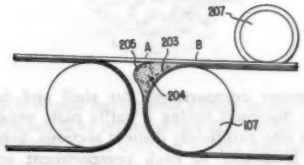
The cylinder has an outlet opening and within the cylinder is a piston with an accurately calibrated surface which, when the piston is moved, accurately controls the outflow of lubricant from the outlet which has a terminal end close to the notch or groove through which the thread passes. The surface which controls the amount of fluid may be an extension of smaller diameter than the diameter of the cylinder housing, an inclined surface, or an eccentric surface formed on the piston which, when the piston is rotated, permits more or less fluid to be applied to the outlet opening. Upon full travel of the piston, fluid is shut off so that no oil will escape, for example during yarn changing.

3,766,887

DEVELOPING DEVICE FOR ELECTROSTATIC LATENT IMAGE

Masamichi Sato, and Osamu Fukushima, both of Asaka, Japan, assignors to Fuji Photo Film Co. Ltd., Minami Ashigara-shi, Kanagawa, Japan

Filed Jan. 8, 1971, Ser. No. 105,052
Claims priority, application Japan, Jan. 8, 1971, 46/2588
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **2 Claims**



An apparatus for developing an electrostatic latent image which comprises a plurality of developing units in series for conveying electrophotographic material smoothly therethrough, each unit comprising (a) a downwardly inclined endless belt provided with protruding ridges along the sides of a surface thereof for conveying electrophotographic sheet material and further provided with an electroconductive layer and (b) a driving mechanism for the endless belt, a plurality of liquid developer feeding nozzles and side plates respectively associated with the developing units disposed at points lower than the path of the electrophotographic sheet material and further disposed, for each developing unit, at the proximity of the uppermost portion of the endless belt, and means contacting the endless belt under the feeding nozzles for cleaning the endless belt thereby holding the liquid developer in a concave part formed by the endless belt, side plates, developer feeding nozzles and the cleaning means, the endless belt feeding the liquid developer thus held in the concave part to the electrophotographic sheet material.

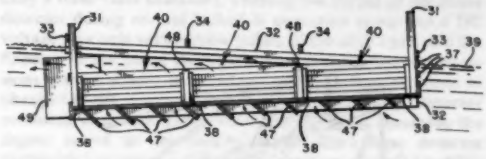
3,766,888

SYSTEM FOR GROWING CONCENTRATED POPULATIONS OF OYSTERS AND RELATED SHELLFISH

John L. Wiegardt, Jr., Box 16, Nahcotta, Wash.

Filed Nov. 8, 1971, Ser. No. 196,684
Int. Cl. A01k *61/00*
U.S. Cl. 119—4 **5 Claims**

Systems are described for the forced feeding of mollusks such as free oyster and clam seed employing rafts or a flume, having means holding the free oyster or clam seed. Water containing nutrients is forced upwardly through the free oyster or clam seed to feed a dense population thereof by tide flow in a system operating below water level. The rafts are anchored to take advantage of the tide flow. Baffles graduated in length from the forward end to the rear are provided at spaced intervals, transverse to the direction of the incoming tide flow. These baffles extend downwardly at a forward inclined angle. The system includes trays having foraminous bottom walls in



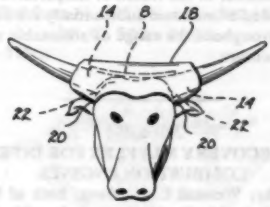
which the free oyster or clam seed rests. The upward flow of water through the oyster and/or clam population also continuously removes detritus generated.

3,766,889

ARTIFICIAL HORNS FOR RODEO STEERS AND METHOD OF CONSTRUCTING SAME

Thomas Lewis Mills, P.O. Box 1058, Rt. 5, Phoenix, Ariz., and Tim Luverne Anton, 3643 W. Frier Dr., Phoenix, Ariz.

Filed Feb. 12, 1973, Ser. No. 331,687
Int. Cl. A01k *17/00*
U.S. Cl. 119—144 **12 Claims**



The disclosure teaches a novel artificial horn device for use on a short horned steer to simulate the structure of a long horn steer such as is used in rodeo events, e.g., bulldogging, steer roping, etc., and a method of constructing same. A pair of hollow artificial horns filled with mastic are pressed onto the short immature horns of a steer. A tie bar is positioned on top of the crown of the steer's head overlapping the base portion of the horn. Plaster of paris or other suitable hardening plastic material is built around the base of the horns, the tie bar and a portion of the crown of the steer's head to a thickness sufficient to bind together the tie bar and the horns and lend additional support between the base of the horns and the head of the steer. The device is a semi-permanent structure which may be removed after it has served its purpose, without injury to the steer.

3,766,890

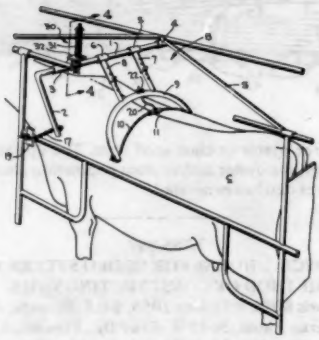
COW CONTROLLING METHOD

Wallace L. Baker, R.F.D. 1, Box 166A, Burley, Idaho

Division of Ser. No. 56,407, July 20, 1970, Pat. No. 3,685,492, which is a continuation-in-part of Ser. No. 719,175, April 5, 1968, Pat. No. 3,572,294. This application Apr. 6, 1972, Ser. No. 241,594
Int. Cl. A01k *29/00*
U.S. Cl. 119—96 **5 Claims**

A device and method wherein positive pressure is applied in the sway of the back of an animal to prevent arching of the back to thereby prevent kicking and sidewise movement of the animal. The pressure member which may be a cable or chain, is curved and flexible so as to fit the contour of the back and so as to be horizontally or longitudinally flexible and positionable as desired. A spanning bar extending down along the sides of the animal positively fixes the ends of the pressure member against upward movement. A rigid pressure section is

positioned substantially at the center of the flexible member to increase the pressure at the backbone relative to the sides of the back. The section may be spool shaped so as to engage the



sides of the backbone. A spring is utilized to normally retain the pressure member in the raised or inoperative position and means is provided to maintain substantially the same effective spring force throughout the range of adjustable movement of the pressure member.

3,766,891

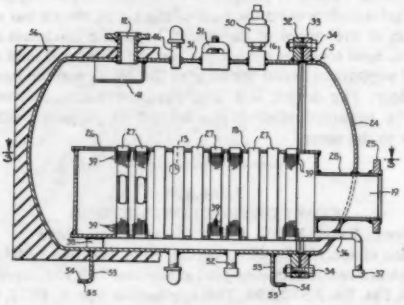
HEAT RECOVERY MUFFLER FOR INTERNAL COMBUSTION ENGINES

Denis G. Csathy; Wendell L. Y. Hung, both of Minneapolis; Charles J. Rehoski, St. Paul, and Jon M. Heath, New Brighton, all of Minn., assignors to Deltak Corporation, Minneapolis, Minn.

Filed June 12, 1972, Ser. No. 261,730

Int. Cl. F22b *1/18*

U.S. Cl. 122—7 R **9 Claims**



Engine exhaust gas is circulated through a U-shaped gas passage comprising a heat exchanger. Most of the gas passage is enclosed in a pressure vessel having a cup-shaped main body member and a complementary removable end wall. Terminal portions of the gas passage extend through the end wall so that the heat exchanger is withdrawn from the cup-shaped body part as the end wall is separated therefrom. Engine coolant is circulated through the pressure vessel to have its heat utilized for steam generation along with that of the exhaust gas.

3,766,892

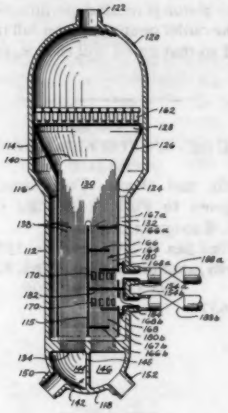
SPLIT FEED ECONOMIZER

Kenneth Earl Webster, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 21, 1972, Ser. No. 246,441

Int. Cl. F22b *1/06*

U.S. Cl. 122—32 **18 Claims**



An economizer compartment for shell and tube vapor generators is disclosed having a baffle plate separating the compartment into two fluidly distinct sections. Separate nozzles deliver feedwater to each compartment and control means are provided to regulate the rate of feedwater flow delivered to each in order to enhance the operating efficiency of the vapor generator.

3,766,893

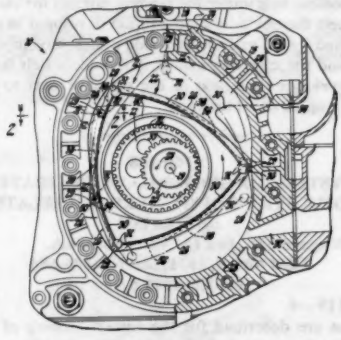
ROTARY COMBUSTION ENGINE SPARK PLUG ARRANGEMENT

Ralph E. Tredway, Clarkston, and David G. Kokochak, Royal Oak, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 9, 1972, Ser. No. 279,195

Int. Cl. F02b *55/14*

U.S. Cl. 123—8.45 **4 Claims**



A rotary combustion engine having a rotor that planetates within a housing in a rotor cavity defined by a pair of oppositely facing side walls and an interior peripheral wall and working chambers that are defined by these walls and the rotor and rotate with the rotor while varying in volume is provided with a spark plug whose electrode is open to a spark access hole through one of the side walls wherein as the rotor planetates

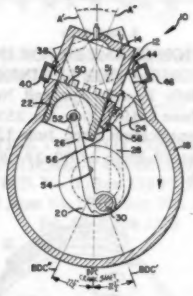
the working chambers are operatively periodically connected to this access hole and are prevented by seals on the rotor from providing connection between any of the chambers.

3,766,894

TWO CYCLE INTERNAL COMBUSTION ENGINE WITH SEQUENTIAL OPENING AND CLOSING OF EXHAUST AND INTAKE PORTS

Lawrence A. Mize, 161 Minorca Way, Millbrae, Calif.

Filed Mar. 22, 1971, Ser. No. 126,748
Int. Cl. F02b *25/12*
U.S. Cl. 123—53 B 11 Claims



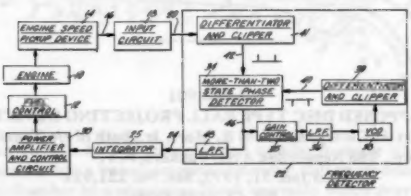
A two cycle engine having dual pistons in which the pistons arrive at their top dead center substantially simultaneously. Individual chambers of the cylinder for the pistons are inclined with respect to each other at an angle of between about 25° to about 45°. Crank shaft throw arms for the pistons are aligned, they have a pitch diameter no greater than the piston diameter to assure a short stroke and the connecting rods are relatively short so that the bottom dead centers of the two pistons are spaced apart by about 35° to 45°. The short rods are dished in on one side to prevent interference with the cylinder walls. The piston leading the other one during operation of the engine opens and closes the exhaust port of the cylinder while the trailing piston opens and closes the intake port. During a complete operating cycle of the engine the exhaust port is first opened, then the intake port is opened, thereafter the exhaust port is closed and lastly the intake port is closed.

3,766,895

ELECTRIC SPEED CONTROL SYSTEM AND MORE-THAN-TWO-STATE PHASE DETECTOR SUITABLE FOR USE THEREIN

James R. Voss, Wilbraham, and William R. Ferry, Agawan, both of Mass., assignors to Ambac Industries, Incorporated, Springfield, Mass.

Filed Aug. 13, 1971, Ser. No. 171,629
Int. Cl. F02d *11/10*
U.S. Cl. 123—102 10 Claims



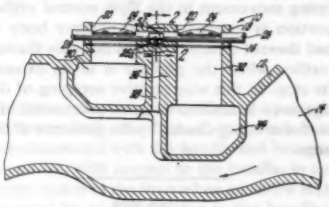
An engine speed electric governer employing a more-than-two-state phase detector to generate the control signal for holding the engine speed at a predetermined nominal value corresponding to a null voltage level produced by one of the interior states of a more-than-two-state phase detector (typically a three-state detector), whereby the output of the phase detector during normal locked-in operation comprises a DC voltage plus only very narrow pulses of low duty cycle and the filtering of the phase detector output is simplified. On occasions when a sudden load change causes the engine speed to change enough to prevent lock-in of the detector, the detector produces an unambiguous electrical signal for returning the engine speed to the lock-in range. The phase detector preferably comprises a differential-input operational amplifier having an inverting input terminal and a non-inverting input terminal, a direct-coupled negative feedback circuit from the output terminal thereof to the inverting input terminal, and a direct-coupled positive feedback circuit which is connected between the output terminal and the non-inverting input terminal when the output voltage of the amplifier lies outside a central range in either direction but which is disconnected by the action of appropriately biased diode-rectifiers when the output voltage is in the central range.

3,766,896

BUTTON VALVE EXHAUST GAS RECIRCULATION SYSTEM

Edwin J. Buehler, Lansing, and Kelly W. Thurston, Okemos, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed June 14, 1972, Ser. No. 262,617
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A 3 Claims



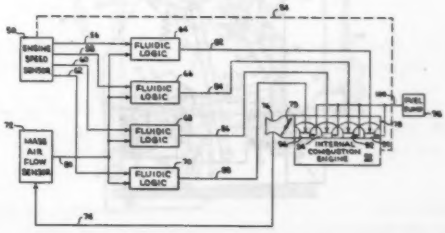
A button valve secured by a leaf spring to the engine carburetor is operated by a flat on the throttle shaft of the carburetor to meter exhaust gases from the engine exhaust cross-over passage into a cross passage in the carburetor leading to the induction bores of the carburetor.

3,766,897

FLUIDIC CONTROL APPARATUS FOR FUEL INJECTION SYSTEMS

Royce H. Husted, Wheaton, Ill., assignor to Automatic Switch Co., Florham Park, N.J.

Filed Aug. 23, 1971, Ser. No. 173,870
Int. Cl. F02d *11/0*; F02m *37/14*; F02n *39/00*
U.S. Cl. 123—119 R 19 Claims



A fluidic controlled fuel injection system for internal combustion engines comprises an engine speed sensor and a sensor

for monitoring the mass flow of air into the intake manifold. The sensors provide digitized fluidic inputs to fluidic logic circuits for deriving phased fluidic load signals utilized to control various fuel injection valves.

3,766,898

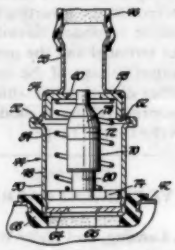
CRANKCASE VENTILATION VALVE

Wesley W. McMullen, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 21, 1971, Ser. No. 191,524

Int. Cl. F02d *9/00*

U.S. Cl. 123—119 B **3 Claims**



A crankcase ventilation valve for an internal combustion engine has an undercut portion of the plunger body which acts as a deposit storage area for adherent deposits scraped from the flow control portion of the plunger body through its reciprocating movement in the flow control orifice. The undercut portion is located on the plunger body so that the closest end thereof enters but does not pass through the flow control orifice when the plunger is in its extreme position against its stop. In this way positive scraping of deposits into the storage area is assured without substantial effect on the valve flow curve being caused by the presence of the undercut storage area.

3,766,899

FUEL MIXTURE REGULATOR FOR SPARK PLUG-IGNITED INTERNAL COMBUSTION ENGINES

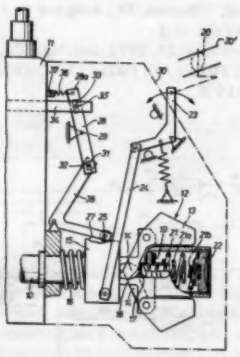
Hartmut Isselhorst, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 7, 1972, Ser. No. 224,068

Claims priority, application Germany, Feb. 25, 1971, P 21 08 824.4

Int. Cl. F02d *1/04, 1/06*

U.S. Cl. 123—140 CC **2 Claims**



In an rpm-responsive regulator for controlling the fuel mixture, a three-dimensional cam (which, through a follower and linkage mechanism controls the fuel rack of a fuel injection pump) is displaced by integral arms of rpm-responsive centrifugal weights against the resetting force of governor springs acting through an intermediate member also displaced by the arms. For one and the same change in the pivotal position of the centrifugal weights the displacement of the three-dimensional cam is greater than the displacement of the intermediate member. This is ensured by providing that the distance of the pivotal axis of each weight from the contact area between arm and cam is — for any pivotal position of the weights — greater than the distance of said pivotal axis from the contact area between arm and intermediate member.

3,766,900

COMBUSTION CHAMBER FOR INTERVAL COMBUSTION ENGINES

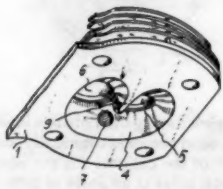
Guglielmo Aiti, Vialle Fratelli Spazzoli No. 33, Forli, Italy

Filed June 5, 1972, Ser. No. 259,389

Claims priority, application Italy, June 22, 1971, 7252 A/71

Int. Cl. F02b *23/00, 23/08*

U.S. Cl. 1231191 M **2 Claims**



Combustion chamber for four-stroke internal combustion engines, a recess being formed in the head thereof and accomodating a baffle causing said recess to take a substantially heart-like configuration. In piston iiston of said combustion chamber a recess is also formed and has a baffle causing said recess to take a similar hear-like configuration. In the engine, the two recesses for the head and cylinder are respectively opposite the cylinder and portions baffles, so that the combustion chamber comprises two distinct chamber portions in juxtaposed relationship and communicating through "8"-shaped passages. Thus, a perfect combustion of the mixture and high engine efficiency is provided.

3,766,901

OPPOSED DISC TYPE BALL PROJECTING DEVICE

Robert A. Cleary, and Paul R. Mort, Jr., both of c/o Tenni-Pro Corp., 286 Nepperhan Ave., Yonkers, N.Y.

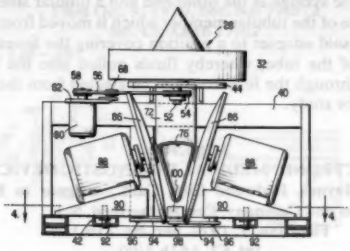
Filed Jan. 31, 1972, Ser. No. 221,911

Int. Cl. F41b *3/04*

U.S. Cl. 124—1 **13 Claims**

A ball throwing device having a pair of counter rotating discs which have a converging gap between so that when a ball is positioned therebetween the counter rotating discs will en-

gage the ball and project it. The discs are mounted on separate supports which are pivotally mounted relative to each other.



The supports are pivotal about vertical axis through links that are caused to move by a manually operated screw.

3,766,902

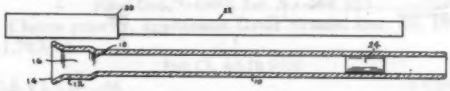
PROJECTILE TYPE TOY FOR PROJECTING ELECTROSTATICALLY CHARGED PROJECTILES

Robert Repinski, R.D. No. 2 (Box 235 F), Blairsville, Pa.

Filed June 14, 1971, Ser. No. 152,752

Int. Cl. F41b *1/00*

U.S. Cl. 124—13 R **2 Claims**



The specification shows a projectile type toy in which a lightweight, preferably foamed, resilient projectile is moved through a barrel and projected out the open end thereof, with the barrel and projectile being formed of materials such that a charge of static electricity is imparted to the projectile as it moves along the barrel. The projectile upon leaving the barrel will, therefore, cling to dry surfaces, such as clothing and drapery materials and the like, whereby the device can be employed solely for amusement or in connection with a game but is, nevertheless, harmless.

3,766,903

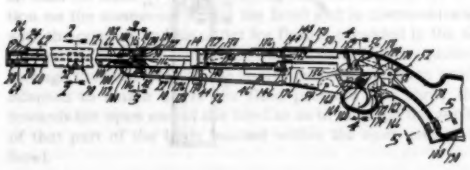
AIR GUN WITH ROTATABLE AMMUNITION LOADING DOOR

Earl L. Fischer, Bentonville, Ark., assignor to Victor Comptometer Corporation, Chicago, Ill.

Filed July 13, 1970, Ser. No. 54,354

Int. Cl. F41b *11/00*; **F41f** *1/04*

U.S. Cl. 124—15 **8 Claims**



An air gun having an elongated tubular housing which is separated into a barrel-magazine chamber and an air compression chamber by a separating block assembly which provides a shot feed passage and firing chamber connected to both chambers while also serving as a cylinder head for the air compression chamber. A one-piece sliding rotatable shot loading plastic door is mounted on a barrel within the tubular housing intermediate the ends of the barrel. A pivotally mounted cocking lever carries a trigger for releasing a spring loaded plunger associated withthe air compression chamber by operative engagement with a sear only when the cocking lever is in a stowed position whereat the major portions of the cocking lever are loccated within a cocking lever slot in the gun.

3,766,904

ARCHERY BOW HAVING RESILIENTLY MOUNTED BOW LIMBS

Tadao Izuta, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Dec. 23, 1971, Ser. No. 211,330

Claims priority, application Japan, Dec. 31, 1970, 45/123581

Int. Cl. F41b *5/00*

U.S. Cl. 124—24 R **3 Claims**

A separable bow comprising a handle and a pair of limbs, an upper and a lower limb, the foot of each limb being disengageably interconnected with the handle and being supported movably to and fro, with respect to the handle, in conformity with vibrations caused in the limb when an arrow is shot. Each limb is supported by two projection in the handle and each projection has a resilient member associated therewith for absorbing the vibrational movements of each limb.

3,766,905

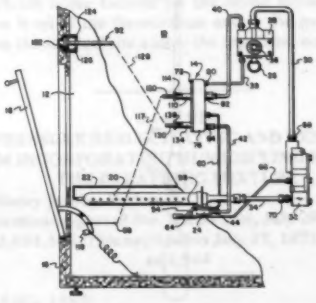
CONTROL SYSTEM AND VALVE STRUCTURE FOR GAS OVENS

George F. Sekera, Jr., Hinsdale, Ill., assignor to Harper-Wyman Company, Hinsdale, Ill.

Filed Sept. 28, 1972, Ser. No. 293,094

Int. Cl. F24c *3/12*

U.S. Cl. 126—42 **9 Claims**



A gas oven system includes a main oven burner and a pilot burner providing an intermittent control pilot flame and a standing pilot flame in response to gas supplied from a

manually and thermostatically operated oven control. A safety valve admits gas to the main burner when the control pilot flame is sensed. A pilot flow control valve structure has an inlet receiving standing pilot flow, an inlet receiving heater pilot flow and an outlet providing both standing pilot and heater pilot flows to the pilot. The valve structure includes one valve preventing all flow to the pilot unless the valve is opened manually or is held open by sensed standing pilot flame, and another valve interrupting heater pilot flow whenever the oven door is open.

3,766,906

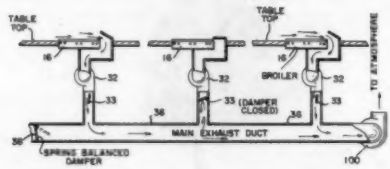
DINING ARRANGEMENT

Louis Joseph Jenn, c/o Jenn-Air Corporation, 3035 N. Shadeland Ave., Indianapolis, Ind.

Filed Feb. 7, 1972, Ser. No. 223,902

Int. Cl. F24c *7/04*

U.S. Cl. 126—299 B **22 Claims**



A table and dining arrangement, such as for a restaurant, wherein guest, in assembly around a table, may optionally at least partially serve themselves in the broiling of meats on a table top level open-air broiler provided with air exhaust means for drawing air across the broiler for collecting cooking smoke and odors rising therefrom for exhaustion, either directly or through a common or central exhaust ducting system, to exteriorly of the restaurant, or the like.

The exhaust system is pressure balanced at a below atmospheric pressure for use with plural open-air broilers in a restaurant for collecting and expelling cooking smoke and odors to the atmosphere. The system comprises a main duct or ducts through which air is drawn by a power exhaust fan for maintaining said reduced pressure therein and for receiving cooking smoke and odors through discharge conduit from said broilers.

3,766,907

METHOD OF PREPARING ENDOMETRIAL SAMPLES

Robert W. Muenzer, Toledo, Ohio, assignor to Dow Corning Corporation, Midland, Mich.

Filed July 22, 1971, Ser. No. 165,224

Int. Cl. A61b *10/00*

U.S. Cl. 128—2 B **1 Claim**

There is disclosed herein an aspiration and method of using same for obtaining cell samples from the walls of a body cavity and designed particularly for obtaining samples from the lining of the uterus. The device comprises a tubular member, fenestrated at one end and adapted for connection to a hypodermic syringe at the other end and a tubular sleeve over the surface of the tubular member which is moved from a position near said adapter to a position covering the fenestrae on the end of the tube, whereby fluids pulled into the tubular member through the fenestrae can be ejected from the end of the tube for study.

3,766,908

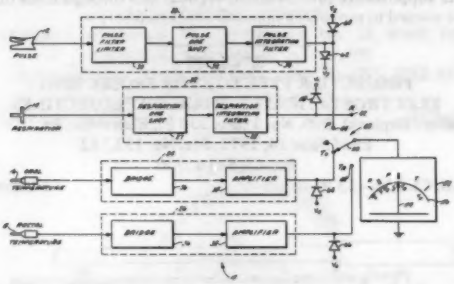
ELECTRONIC MEDICAL DIAGNOSTIC DEVICE

John L. Haynes, Redwood City, Calif., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Jan. 7, 1972, Ser. No. 216,128

Int. Cl. A61b *5/00*

U.S. Cl. 128—2 H **5 Claims**



An electronic medical diagnostic device is provided capable of measuring a plurality of body functions such as respiration, pulse and temperature. The device includes a single meter scale which is divided into discrete, nonoverlapping portions with each portion defining a range for each of the body functions. Means are provided to limit the movement of the meter indicator to that portion of the meter scale associated with the body function being monitored and to prevent the meter indicator from registering in a portion of the scale allocated to a different body function.

3,766,909

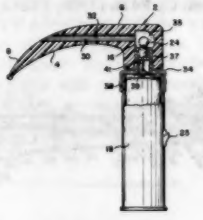
LARYNGOSCOPE WITH DISPOSABLE BLADE AND LIGHT GUIDE

Ahmet M. Ozbey, 8221 Clay Dr., Oxon Hill, Md.

Filed July 20, 1971, Ser. No. 164,353

Int. Cl. A61b *1/06, 1/24;* **G02b** *5/16*

U.S. Cl. 128—11 **10 Claims**



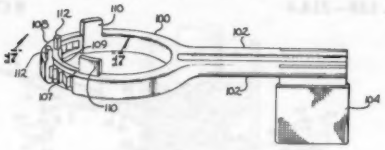
A laryngoscope including a wireless, disposable blade containing a relatively stiff light guide for transmitting light from a light source associated with the handle to a point substantially midway between the ends of an upper curved section of the blade. The preferred embodiment includes a blade having a straight light guide and an adaptor for connecting the blade to the handle and for mounting the light source in a position adjacent one end of the light guide.

3,766,910

DISPOSABLE DELICATE TISSUE RETRACTOR

Peter A. Lake, 121 S. Palm Canyon Dr., Palm Springs, Calif.

Filed Oct. 9, 1970, Ser. No. 79,372
Int. Cl. A61b 17/02
U.S. Cl. 128—20 19 Claims



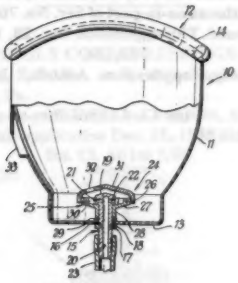
A disposable self-retaining brain and delicate tissue retractor with interchangeable disposable blades. The retractor and blades are designed to be molded from a lightweight material such as a plastic. The blades may be made of various shapes and sizes and, in most instances, are designed to be coated with a strip of gauze like material to protect and prevent injury to the brain or other soft tissue.

3,766,911

MASSAGE DEVICE

Leslie Green, 50 Wellwood Rd., Goodmayes, Ilford, England

Filed Dec. 7, 1971, Ser. No. 205,683
Claims priority, application Great Britain, Dec. 30, 1970, 61,783/70
Int. Cl. A61h 9/00
U.S. Cl. 128—66 4 Claims



A massage device for the hydro-therapeutic massage of the human body, the device comprising a bowl having a side wall, an open end adapted to be placed against the body and a closed end with a substantially rigid tubular connector extending through the closed end and forming a conduit constituting an inlet for fluid. A rotatable spray head is mounted for rotation on the connector within the bowl and in communication with the conduit and an outlet for fluid is provided in the side wall of the bowl. In operation, fluid is passed under pressure through the connector to the spray head and the spray head is adapted to rotate under the fluid pressure and spray fluid towards the open end of the bowl so as to massage the surface of that part of the body located within the open end of the bowl.

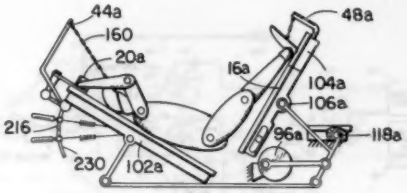
3,766,912

ORTHOPEDIC TRACTION TABLE

E. Robert Daniels, 638 W. Duarte Rd., Arcadia, Calif.

Filed Oct. 26, 1971, Ser. No. 192,413
Int. Cl. A61f 5/00
U.S. Cl. 128—71 10 Claims

An orthopedic table is disclosed by which a patient's spine, shoulders and hamstrings may be placed in traction in a degree that is partly related to his size and weight. The patient is harnessed to the head and foot ends of the table while lying substantially horizontal. Thereafter, the central region of the table is lowered by tilting of its upper and lower sections whereby the patient's weight is removed from the table in part and transferred to the harnesses. To aid in accomplishing a desired distribution of reaction forces within the patient, the



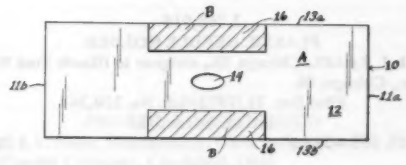
apparatus operates to pull the patient's legs upwardly in the direction of their length. The apparatus by which the patient's head and arms are harnessed to the table is made yieldable in varying degree so that the table operator can adjust the relative amount of force applied to the patient's head and shoulders and to enable him to adjust the absolute amount of those forces.

3,766,913

SURGICAL DRAPE WITH ABSORPTIVE REGION

Jay Z. Balin, Chicago, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Apr. 29, 1970, Ser. No. 32,950
Int. Cl. A61f 13/00
U.S. Cl. 128—132 D 9 Claims



A disposable surgical drape, having a fenestration therein through which the surgeon has access to the surgical site of the patient covered by the drape; the top surface of the region of the drape adjacent the fenestration being fluid repellent and non-absorptive; and another region of the drape adjacent said fluid repellent, non-absorptive region which is capable of absorbing fluids being located on the drape surface at a level below the level of the fenestration and in the path of flow of fluid from the surgical site across the repellent, non-absorptive region.

3,766,914

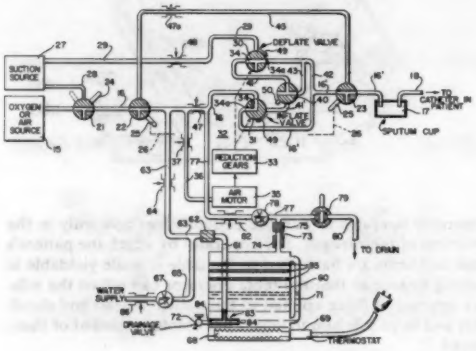
HIGH PRESSURE RESUSCITATING AND VENTILATING SYSTEM INCORPORATING HUMIDIFYING MEANS FOR THE BREATHING MIXTURE

Harvey Barry Jacobs, Reston, Va.

Continuation-in-part of Ser. No. 59,206, July 29, 1970, Pat. No. 3,682,166. This application July 15, 1971, Ser. No. 162,944
Int. Cl. A61m 16/00
U.S. Cl. 128—145.8 1 Claim

A resuscitating and ventilating system is provided wherein a relatively high pressure breathing gas mixture is utilized. The flow of the breathing mixture is cyclically controlled by inflating and deflating valve means, which valve means is actuated

by an air motor driven by the high pressure gas. A high pressure piping system connects the source of high pressure gas to the valve means and to the gas supply pipe of the motor. A gas-bubbling-through-water type humidifier is incorporated in the system. The gas inlet of the humidifier tank is connected to the high pressure piping system upstream of its connection to the gas supply pipe of the motor, and the outlet pipe of the humidifier tank is connected to the high pressure piping downstream of its connection to the gas supply pipe of the motor. Thus, the humidifying system bypasses the motor. Further, a water supply is connected to the humidifying tank and the connections are so controlled by valves whereby the water in the tank may be replenished without shutting off the flow of the breathing mixture to the patient.



3,766,915

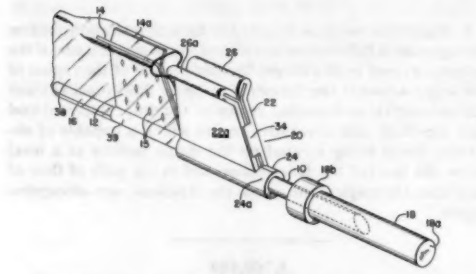
PLASTIC NEEDLE HOLDER

Frank J. Rychlik, Chicago, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 21, 1971, Ser. No. 210,364

Int. Cl. A61m *5/32*

U.S. Cl. 128—214.4 **4 Claims**



An intravenous catheter and cannula assembly as a sterile package with a flexible catheter partially telescoped within the cannula which is of the break-away needle type having wings to be manipulated in parting the cannula from the vein-inserted catheter; and a plastic handle interfitted with the wings for manipulation thereof and serving to secure a plastic bag or sheath thereto as a sterile covering for the remaining length of the catheter therein; and with a protective tube-like cover for the needle end of the cannula to maintain the sterile condition of the assembly as a whole prior to vein insertion use.

3,766,916

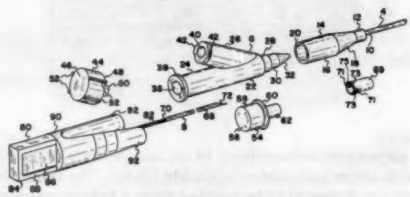
Y STYLET CATHETER PLACEMENT ASSEMBLY

Harvey Moorehead, Salt Lake City; George R. Reading, Sandy, and Silas S. Smith, Bountiful, all of Utah, assignors to Deseret Pharmaceutical Co., Inc., Sandy, Utah

Filed July 7, 1972, Ser. No. 269,671

Int. Cl. A61m *5/00*

U.S. Cl. 128—214.4 **8 Claims**



Catheter placement units wherein the catheter tube is fixed to a generally Y-shaped transparent central unit. The stylet needle is provided with a tab to facilitate manual manipulation of the placement unit and extends through a bore in one arm of the central unit and through the catheter tue. The needle is formed with an opening adjacent the proximal end thereof which communicates the bore of the needle with the bore of the other arm of the central unit to provide visual indication of blood flashback indicative of successful venipuncture.

3,766,917

TWO COMPARTMENT AMPUL SYRINGE

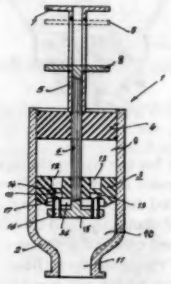
Hans Wimmer, Vicht, Germany, assignor to The West Company, Phoenixville, Pa.

Continuation of Ser. No. 791,093, Jan. 14, 1969, abandoned, which is a continuation-in-part of Ser. No. 703,149, Feb. 5, 1968, abandoned. This application Dec. 28, 1970, Ser. No. 102,254

Claims priority, application Austria, Jan. 26, 1968, 4A784/68

Int. Cl. A61m *5/00*

U.S. Cl. 128—218 M **2 Claims**

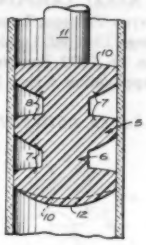


A two-chamber syringe ampul with an ampul cylinder which at one end runs into a mouthpiece, designed to take an injection needle and which is as a rule closed in the first place, with at the end of the ampul cylinder opposite the mouthpiece an elastic closure piston which seals against the exterior, and with a separating piston which divides the ampul cylinder into two chambers, and with at least one pusher element acting on the separating piston, characterized in that the separating piston and/or an associated pusher element, passing through the separating piston and displa cable, has or forms a connection channel bridging over the separating piston, which channel prior to use of the syringe ampul is closed, and can be opened by an axial movement of the pusher element relatively to the separating piston, and in that both pistons are made displaceable, and during the injection can be connected together so as to be displaceable in common.

3,766,918
SELF-ASPIRATING HYPODERMIC AMPULE

John D. Kessel, 458 Arnell Rd., Camarillo, Calif.

Continuation-in-part of Ser. No. 848,052, Aug. 6, 1969, abandoned. This application Sept. 7, 1971, Ser. No. 177,984
Int. Cl. A61m 5/22, 1/00
U.S. Cl. 128—218 P 7 Claims



A self-aspirating hypodermic ampule which incorporates a piston capable of limited resilient movement when a force is manually applied to effect a hypodermic injection so that, when the force is subsequently released, the piston retracts sufficiently to cause a back flow or aspirating flow through the needle into the ampule for blood detection; the piston including radial flanges the axial sides of which converge to permit resiliant distortion and axial displacement of the central portion of the piston before sliding movement of the piston relative to the surrounding walls of the ampule; the piston also being arranged for insertion in the ampule, either end forward and its ends being shaped to minimize gas entrapment thereby maximizing the effect of its aspirating movement.

3,766,919
TELESCOPINGLY COUPLED SYRINGE AND VIAL

Harold S. Cloyd, Erie, Pa., assignor to Nosco Plastics, Incorporated, Erie, Pa.

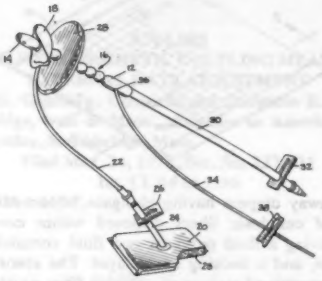
Continuation-in-part of Ser. No. 749,448, Aug. 1, 1968, abandoned. This application Dec. 15, 1970, Ser. No. 98,226
Int. Cl. A61m 5/00
U.S. Cl. 128—220 6 Claims

An inverted type syringe in which a double-ended needle is molded into a solid post with a socket at its upper end complementary to a stopper piston closing a cylindrical vial. In use, as the stopper is inserted into the socket it is punctured by the needle so that a continued pressure on the vial causes ejection of the contents. In a preferred form, a cylindrical plastic holder telescopically receives the vial and a hub on the holder is cemented or sealed to the post.

3,766,920
ENEMATA ADMINISTERING DEVICE

Franklin R. Greene, Flushing, N.Y., assignor to E-Z-EM Company, Inc., Westbury, N.Y.

Filed July 21, 1971, Ser. No. 164,660
Int. Cl. A61m 3/00
U.S. Cl. 128—246 1 Claim

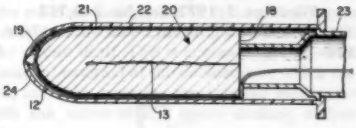


A smooth, flexible enema tip having an inflatable balloon mounted on the stem behind the exit port from the tip. A limited volume, flexible, hand distendable air reservoir is connected to the balloon-like retention ring so that operator compression of the reservoir will inflate the ring. The reservoir is filled with a resilient sponge so that the reservoir will snap back to its full volume shape once operator pressure is removed and thus normally deflate the ring. A soft, flexible, plastic annular retention pad is mounted for axial movement along the enema stem which terminates on the tip. This pad cooperates with the balloon to hold the balloon in position.

3,766,921
PROXIMAL APEX TAMPON

Bernard A. Dulle, Montgomery, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Aug. 18, 1971, Ser. No. 172,792
Int. Cl. A61f 13/20
U.S. Cl. 128—263 14 Claims



A catamenial device wherein a flexible, resilient, dry-expanding, elastic absorbent tampon, which when subjected to intravaginal pressures becomes wider at one end, is resiliently compressed and oriented in the inserter so that the end opposite the intravaginal wider end will be located deepest within the vagina when the tampon is ejected into the vagina.

ERRATUM

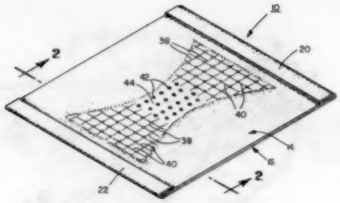
For Class 173—57 see:
Patent No. 3,766,996

3,766,922

THROW-AWAY BOY AND GIRL DIAPERS

Evelyn H. Krusko, Philadelphia, Pa., assignor to Scott Paper Company, Delaware, Pa.
Delaware, Pa.

Filed Aug. 2, 1971, Ser. No. 168,159
Int. Cl. A61f 13/16
U.S. Cl. 128—284 39 Claims



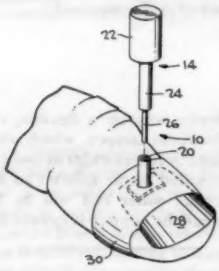
Throw-away diapers having elongate, absorbent pads, or sections of cellulosic fibers disposed within covering envelopes having a fluid pervious and fluid containing facing cover layer, and a backing cover layer. The absorbent pads have predetermined regions of differing fiber weight through the thickness per unit surface area thereof wherein the greatest weight of fibers through the thickness per unit surface area is included in a predetermined region where it is most needed to retain body fluids. An embossed pattern in the facing layer and underlying absorbent pad defines valleys and ridges in all of the predetermined regions, and the density of the absorbent pad in the valleys is greater than the density of the absorbent pad in the ridges. Absorbent pads in throw-away diapers for use by girl babies comprise an elongate, fluff batt of cellulosic fibers in which an elongate, middle one-third thereof constitutes the predetermined region having the greatest weight of fibers through the thickness per unit surface area. Absorbent pads in throw-away diapers for use by boy babies comprise a main fluff batt and a secondary fluff batt. The elongate, forward one-third of the main fluff batt constitutes the predetermined region having the greatest weight of fibers through the thickness per unit surface area thereof. The secondary fluff batt is disposed forwardly of the main fluff batt and is folded over the main fluff batt during use of the diaper. The elongate, absorbent pads utilized in the throw-away diapers of this invention also constitute a part of the present invention.

3,766,923

DEVICE FOR TREATING SUB-UNQUAL HEMATOMA

John W. Boretos, Rockville, Md., assignor to The United States of America, as represented by the Secretary of Health, Education and Welfare

Filed Apr. 3, 1972, Ser. No. 240,752
Int. Cl. A61f 7/00; A61m 27/00; A61b 17/34
U.S. Cl. 128—303.1 5 Claims



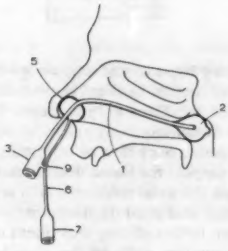
A device for treating sub-ungal hematoma having guide means and plunger means. The plunger means includes a metal tip which is heated and pushed through the guide means which has been affixed to the nail above the injured area. The heated metal tip melts a channel through the nail to a pool of blood or hematoma beneath the same. When the plunger means is withdrawn, the entrapped blood is allowed to drain.

3,766,924

NASAL TAMPONS

Rosemary Sylvia Vyvyan Pidgeon, London, England, assignor to Matburn (Holdings) Limited, London, England

Filed Jan. 26, 1972, Ser. No. 220,816
Claims priority, application Great Britain, Feb. 4, 1971, 3,890/71
Int. Cl. A61b 17/12
U.S. Cl. 128—325 3 Claims



A nasal tampon, that is to say a device for arresting nasal haemorrhage comprises a lumen tube an end of which can be entered into the nostril of a patient. An inflatable balloon is provided at this end of the lumen tube and a closure is provided at the other end. The balloon can be inflated by passing air through the lumen tube. An inflatable sleeve or cuff is slidable on the outside of the lumen tube. An inflation tube leads to the inflatable sleeve or cuff and a closure is provided at the end of the inflation tube.

3,766,925

SURGICAL CLAMP WITH CAM-ACTION LEVER

Jeanette Lois Rubricius, New York, N.Y., assignor to Eljay Hospital Products Corp., New York, N.Y.

Continuation of Ser. No. 833,051, June 13, 1969, abandoned.
This application May 25, 1971, Ser. No. 146,676
Int. Cl. A61b 17/12, 17/08
U.S. Cl. 128—346 11 Claims

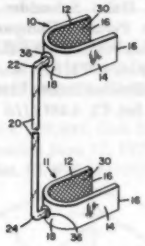
A disposable plastic clamp particularly suited for medical uses is provided. The clamp is preferably made all in one piece and has three portions which are pivotally movable relative to each other. Two of these portions are jaws between which the object to be clamped is placed and the third portion is a cam-action lever arm which provides a high mechanical force for tightly closing the jaws of the clamp. A catch is also provided for holding the jaws closed in a fixed position.

3,766,926

VASECTOMY PROSTHESIS

Robert Thomas Bliss, Cincinnati, Ohio

Filed Aug. 29, 1972, Ser. No. 284,670
Int. Cl. A61b 17/08
U.S. Cl. 128—346 7 Claims



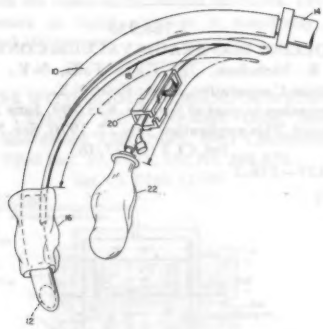
The device comprises a pair of cuffs which are permanently interconnected by means of a filament of body implantable material which is adapted to support and maintain the cuffs in axially spaced alignment, thereby positioning and maintaining the severed ends of the vas deferens in spaced relationship whereby to prevent anastomosis while maintaining the said severed ends in spaced juxtaposition in the event that, at some future time, the patient would want a vasovasostomy performed, that is, have the vasectomy operation reversed.

3,766,927

HYDRAULIC CUFF TRACHEAL TUBE

Richard R. Jackson, 8 Trinity Rd., Marblehead, Mass.

Filed Oct. 22, 1971, Ser. No. 191,708
Int. Cl. A61m 16/00
U.S. Cl. 128—351 8 Claims



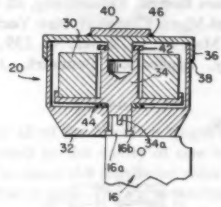
Hydraulic cuff tracheal tube system for respiratory air has cuff filling means comprising a readily collapsible, non-pressure applying filling container connected to the cuff through the flexible filling lumen. The container, lumen and cuff comprise a closed liquid system. The lumen and container extend a predetermined distance from the cuff equal substantially to the gravity head desired in the cuff, e.g. 20 centimeters H_2O. When the container is raised above the cuff, the system is capable of permitting free-flow of liquid into the cuff under influence substantially only of the gravity head with attendant non-pressure-applying collapse of the container. There is shown a collapsible container bag formed of flaccid material, thin plastic sheet or film. A releasable sealing means between the cuff and container prevents flow of liquid into the cuff prior to need; and when reset prevents loss of gravity head pressure after filling of the cuff. With the assembly adapted to receive liquid at the point of use it includes a member through which liquid can be introduced; prior to this the container is in a state of collapse, preferably evacuated. A container may be separable from the cuff and have a seal for preventing escape of liquid when standing alone. Preferably the total volume capacity of the system is about twice the amount of liquid therein and causes part of the system always to be in a collapsed state.

3,766,928

PACER WITH MAGNETIC COUPLING MEANS FOR EXTERNAL RATE ADJUSTMENT

Herbert E. Goldberg, Concord, and Jonathan E. Bosworth, Cambridge, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Mar. 24, 1972, Ser. No. 237,831
Int. Cl. A61n 1/36
U.S. Cl. 128—419 P 11 Claims



There is disclosed a pacer rate adjustment mechanism which utilizes magnetic coupling. In one embodiment of the invention, a diametrically magnetized disc magnet, mounted on a bearing, is fixed to the shaft of a small rate-controlling potentiometer in the pacer. The pacer rate can be adjusted by rotating a strong bar magnet external of the patient, thereby rotating the pacer magnet and turning the potentiometer shaft; continuous rate adjustment is possible without requiring skin puncture. In another embodiment of the invention, two flux-linked diametrically magnetized disc magnets are provided in the pacer. One of them is fixed to the potentiometer shaft and the other is connected to a needle port. The latter magnet is turned by use of a Keith or other needle extended through the skin of the patient; the turning of this magnet causes the potentiometer magnet to rotate and the pacer rate to be varied. Although this embodiment of the invention requires skin puncture to change the pacer rate, it still offers one of the main advantages of the first embodiment, namely, a total hermetic seal with no possibility of fluid penetration into the pacer circuit itself. This is accomplished by mounting the needle magnet external of the enclosure in which the circuitry is potted, and then covering the external magnet and needle port with the conventional epoxy coating and/or silicone rubber boot.

3,766,929

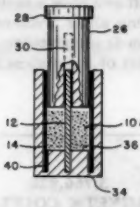
SMOKING PIPE CARTRIDGE PRODUCTION APPARATUS

Michael A. Roman, Sr., South Nyack, N.Y.

Filed Jan. 20, 1972, Ser. No. 219,441
Int. Cl. A24b 13/00; A24d 1/14
U.S. Cl. 131—119 3 Claims

Apparatus for the production of a cartridge of smoking tobacco for a smoking pipe, the apparatus consisting of a mold member defining a cylindrical chamber with a cylindrical

plunger adapted for insertion therein for compression of cut pieces of tobacco, each of the members having a central axial



opening for receiving and supporting the ends of a core piece while tobacco is pressed in the mold member around the core piece.

3,766,930

VAPOR TREATMENT HAIR CURLER

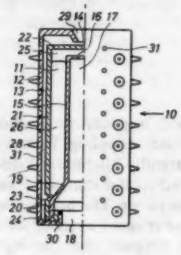
Curt Madsen, Kalundborg; Bent Georg Johansen, Store Fuglede, and Lars Boesen, Kalundborg, all of Denmark, assignors to Bristol-Myers Company, New York, N.Y.

Filed Mar. 29, 1972, Ser. No. 239,158

Claims priority, application Denmark, June 30, 1971, 3237/71

Int. Cl. A45d *2/36*

U.S. Cl. 132—33 R **11 Claims**



A heatable, vapor applying hair curler having a heat-storage body, a liquid reservoir surrounding the body and an outer casing having perforations therein which allow the vaporized liquid to be emitted from the reservoir when the body is heated.

3,766,931

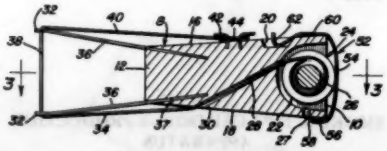
DENTAL FLOSS TOOL

Foreman F. Fielder, R.R. No. 2, Beatrice, Nebr.

Filed Aug. 14, 1972, Ser. No. 280,124

Int. Cl. A61c *15/00*

U.S. Cl. 132—92 A **6 Claims**



For use in holding and dispensing dental floss wound on a spool, an improved tool characterized by a body constituting a handle and having forward and rearward ends, side surfaces, and top and bottom longitudinal surfaces. Manually squeezable tines are mounted on project beyond the forward end and have free ends with which a portion of the dental floss is adjustably connected and held taut for use. A recessed pocket in the rear end serves to accommodate an insertable rotatable spool. An adapter clip serves to position and hold the spool in place.

3,766,932

COLLAPSIBLE RETICULAR STRUCTURES

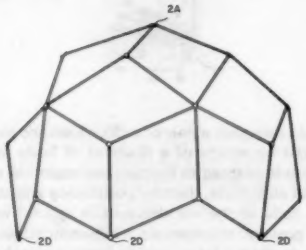
Abraham Sidis, and Haim Schneider, both of Jerusalem, Israel, assignors to Peret-A Company for Planning and Development of Ideas for Industry B.M., Jerusalem, Israel

Filed Mar. 4, 1971, Ser. No. 120,913

Claims priority, application Israel, Mar. 8, 1970, 34025

Int. Cl. A45f *1/16*

U.S. Cl. 135—4 R **12 Claims**



Disclosed herein is a three-dimensional collapsible structure formed by an array of bar-like elements each pivotally connected at its ends to one or more other such elements. The elements and their pivotal connections are arranged to permit the collapse of the three-dimensional structure into a configuration wherein the elements are grouped closely together and disposed in parallel, whereby the collapsed configuration has an overall length which is substantially the same as the length of a single one of the elements.

3,766,933

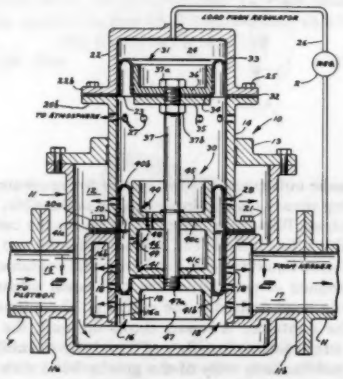
ROLLING DIAPHRAGM VACUUM CONTROL

Charles B. Nicholson, Jr., Glens Falls, N.Y., assignor to Broughton Corporation, Glens Falls, N.Y.

Continuation-in-part of Ser. No. 835,709, June 23, 1969, abandoned. This application July 27, 1970, Ser. No. 58,283

Int. Cl. F16k *31/365*

U.S. Cl. 137—116.3 **9 Claims**



A vacuum control device for controlling the vacuum delivered to certain elements of paper making machines including a housing wherein passages are provided to permit selective control from a vacuum header or atmosphere to a flat box of a paper making machine and wherein a flexible

member is provided to control communication through the vacuum and atmospheric introduction passages which member is normally held in closing position to said passages through the utilization of the introduced vacuum, but will upon proper sensing of the element to be controlled, be rolled past certain of the passages to either open or close the same to thereby control the admission of vacuum or atmospheric pressure or pressure above atmospheric pressure.

3,766,934

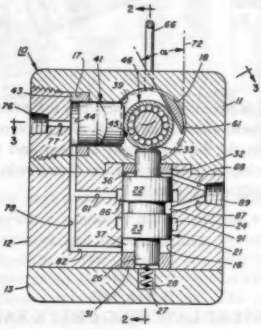
PRESSURE REGULATOR

Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Continuation of Ser. No. 769,935, Oct. 23, 1968, said Ser. No. 578,278. This application June 17, 1971, Ser. No. 154,153

Int. Cl. F16r *31/363*

U.S. Cl. 137—116.3 **17 Claims**



Pressure regulator for maintaining a predetermined ratio between an output pressure of the pressure regulator, or the pressure in an operational system to be served, and an input or source pressure to the regulator, regardless of variations in either or both the input or the output pressures. The ratio of output pressure to input pressure is selectively variable between 0 and 100 percent.

3,766,935

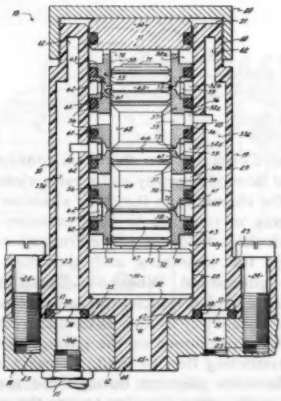
VALVE WITH MODULAR MANIFOLD BODY

William L. Clippard, III, Cincinnati, Ohio, assignor to Clippard Instrument Laboratory, Inc., Cincinnati, Ohio

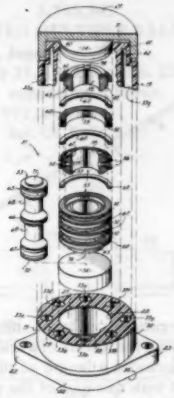
Filed Dec. 10, 1971, Ser. No. 206,636

Int. Cl. F16k *11/00*

U.S. Cl. 137—269 **17 Claims**



A valve having a modular, multi-passage manifold or body. Different types of valve mechanisms are insertable axially through an open end of a cavity formed within the manifold and are sealed therein by a closure. Fluid connections for the valve mechanisms are provided by a plurality of passages which extend parallel to the cavity but within the wall of the manifold, from a common end of the manifold. Each passage extends longitudinally in the manifold parallel to the cavity



over substantially all of the effective length of the cavity, and is selectively ported to the cavity at one or more positions along its length to serve the particular valve mechanism with which the manifold is used. The valve mechanism has circumferential grooves with which the respective manifold cavity ports communicate.

3,766,936

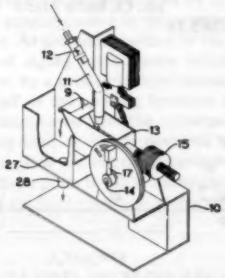
WATER CONTROL APPARATUS RESPONSIVE TO LEAKAGE OR OVERFLOW CONDITIONS

John F. O'Mera, P.O. Box 184, 1157 Garden Ave., Osburn, Idaho

Filed Jan. 21, 1972, Ser. No. 219,619

Int. Cl. E03c *1/00*; **F16k** *37/00*

U.S. Cl. 137—312 **4 Claims**



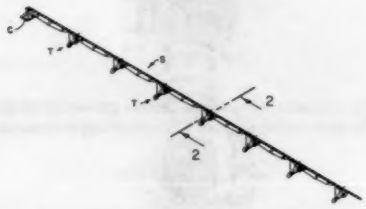
A household or industrial water control apparatus utilized to prevent flood damage by automatically shutting off the main water supply when flood conditions exist. A system of strategically placed collection tubes direct overflow water to the apparatus. The water is received in a vessel which pivots under the weight of the water. As the vessel pivots, an electrical contact is made to activate a solenoid-operated gate valve to close off the main water supply. Various switches at a control box allow an attendant to reset the control apparatus and operate the gate valve.

3,766,937

DRIVE FOR THE TOWERS OF A SELF-PROPELLED SPRINKLER

Elmer E. Lundvall, and Roy Lundvall, both of Greeley, Colo.

Filed Oct. 27, 1971, Ser. No. 192,975
Int. Cl. B05b 9/02; E01h 3/02
U.S. Cl. 137—344 15 Claims



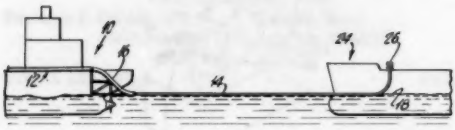
The present invention concerns improvements in the mechanisms for driving the towers of a self-propelled sprinkler of the type which includes a length of pipe supported by an array of towers and with one end of the pipe connected to a water supply pivot about which the sprinkler moves. Ordinarily, the drive at the outermost tower is set to move that tower at a selected rate while the drives at the intermediate towers are controlled by the flexure of the pipe to compensatively speed up or slow down the movement of those towers to hold the pipe in a substantially straight alignment as it rotates about its pivot point.

3,766,938

CARGO TRANSFER SYSTEM FOR A FLOATING STORAGE VESSEL AND OFFTAKER MOORED IN TANDEM

Fred H. Stracke, Convent Station, and John Mascenik, Mt. Tabor, both of N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Jan. 26, 1972, Ser. No. 220,838
Int. Cl. B65h 75/36
U.S. Cl. 137—355.16 7 Claims



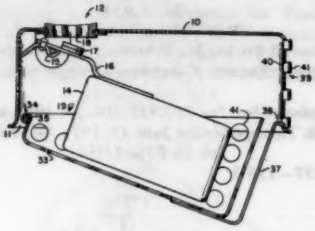
A cargo transfer system including a rack for the storage, retraction and paying out of a hose used in the transfer of cargo is mounted on a moored storage terminal (e.g. a permanently moored vessel or other suitable storage facility). The system includes means for mooring a tanker in tandem with the moored storage terminal and means such as a manifold for connecting the cargo hose between the terminal and the tanker. In one embodiment the rack is arranged to be raised and lowered by means of a hoist on the floating storage terminal.

3,766,939

FLOAT VALVE IMPROVEMENT

Abraham Isadore Reitman, Oakland, Calif.

Filed Mar. 22, 1972, Ser. No. 236,837
Int. Cl. F16k 31/18
U.S. Cl. 137—434 7 Claims



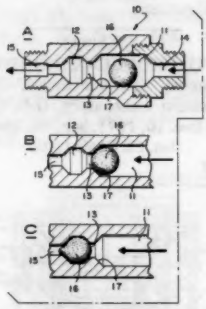
A float valve is provided in which the inlet fitting is adapted to receive different sizes of conduits and prevent syphoning of liquid back into the liquid supply system and which also includes a foraminous float protector functioning also to hold the valve in the closed position.

3,766,940

PRESSURE LATCHING CHECK VALVE

John P. Mason, Midland, Tex., assignor to Esso Production Research Company, Houston, Tex.

Filed Aug. 25, 1971, Ser. No. 174,842
Int. Cl. F16k 17/24
U.S. Cl. 137—460 20 Claims



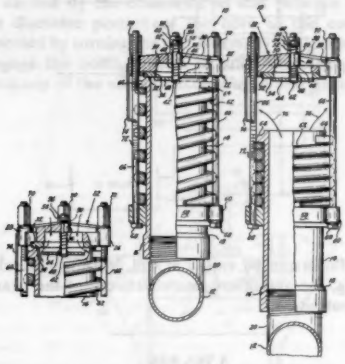
A check valve contains two chambers connected together by a restricted flow passageway and a valve element movable from one of the chambers to the other chamber through the flow passageway in response to fluid pressure changes. At fluid flow velocities below a predetermined velocity fluid flows through the chambers and the flow passageway therebetween unimpeded. When the fluid's velocity rises above the predetermined velocity the valve element moves to close the flow passageway to flow of fluid therethrough. With the valve element positioned on the passageway stopping or significantly restricting flow of fluid, increases in fluid pressure force the valve element through the restricted flow passageway into the other chamber to trap the valve element therein to prevent flow of fluid in either direction through the chambers and the flow passageway.

3,766,941

PRESSURE AND VACUUM RELIEF VALVE

Roy Forrest Davis, Jr., 405 Loma Linda Dr., Apt. D, Fort Collins, Colo.

Filed Apr. 24, 1972, Ser. No. 247,152
Int. Cl. F16k *17/196*
U.S. Cl. 137—493.4 5 Claims



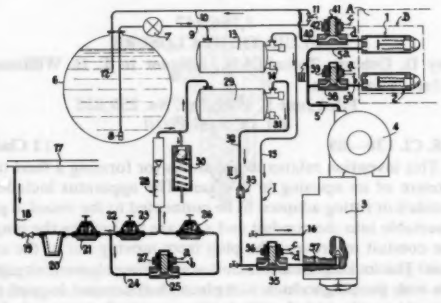
A combination high pressure and vacuum relief valve to relieve excess pressure buildups and overload surges in fluid flow lines, to release and break up any vacuum conditions which might develop in the opening and closing of the fluid flow, and to serve as an air bleeder device to exhaust trapped air when the flow system is started up. The pressure relief function is provided by a spring loaded valve cap for which a precisely calculated pressure scale and indicator is provided and the vacuum breaker valve is also spring loaded in cooperative association with the pressure relief valve assembly.

3,766,942

SYSTEM FOR SUPPLYING AN EMULSION OF LIQUID FUEL AND WATER TO A HEATING BURNER

Claude Delatronchette, Cachan; Raymond Helton, Clamart, both of France; Rene Gunthart, Geneva, and Andre Meissner, Vernier, both of Switzerland, assignors to Elf Union and Ateliers Des Charmilles S.A., Paris, France and Chalelain-Geneve (Swiss)

Filed June 1, 1971, Ser. No. 148,444
Claims priority, application France, June 2, 1970, 7020190
Int. Cl. F23n *5/00*
U.S. Cl. 137—566 4 Claims



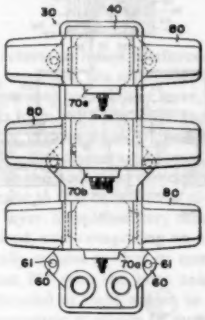
A process and system for supplying an emulsion of liquid fuel and water to a burner capable of operating at a low heating rate and at least another higher heating rate. After stopping the normal heating and for re-igniting the burner, a part of the burner is connected to discharge to the fuel tank without pressure and the burner is first supplied with liquid fuel alone under pressure so as to expel the emulsion which filled the burner when the burner extinguished. The burner filled with liquid fuel alone is ignited and then supplied with the emulsion in accordance with the desired heating rate.

3,766,943

INTEGRATED MULTIPLE VALVE UNIT

Hikaru Murata, Gifu, Japan

Filed July 31, 1972, Ser. No. 276,299
Claims priority, application Japan, July 29, 1971, 46/66879; Aug. 10, 1971, 46/70943
Int. Cl. F17d *1/00*
U.S. Cl. 137—608 5 Claims



An integrated multiple valve unit is provided as a module of hydraulic circuit components and for uniform pipe line geometry. The unit generally comprises a subplate upon the top surface of which are formed a plurality of valve assembly mounting seats in equally spaced apart relation, and a plurality of stacks each comprised of valve assemblies and a solenoid valve mounted on the subplate in the order named. Any of the valve assemblies which effect various functions may be selected and stacked, depending upon desired hydraulic circuit requirements. Each valve assembly seat is provided with a supply port, a discharge or return port and a pair of intake ports, that is the ports for connection with an actuator or the like, at the positions corresponding to the corresponding ports of the solenoid valve. At the undersurface of the subplate are formed a plurality of zigzag intake ports which are spaced apart from each other by a predetermined distance, for example, equal to one half of the spacing between the mounting seats, and intercommunicated with the corresponding intake ports in the mounting seats. A supply port and a discharge or return port of the subplate are intercommunicated with all of the supply and discharge ports in the mounting seats through a supply passage and a discharge passage, respectively.

3,766,944

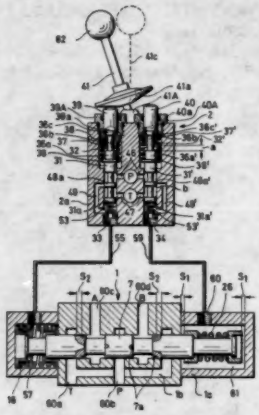
PILOT CONTROLLED FLUID FLOW REGULATING VALVE

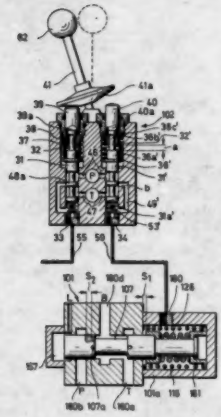
Josef Distler, Lohr am Main, Germany, assignor to G.L. Rexroth GMBH, Lohr/Main, Germany

Filed Oct. 19, 1972, Ser. No. 299,018
Claims priority, application Germany, Oct. 20, 1971, P 21 52 133.5
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.6 10 Claims

A fluid flow regulating valve wherein the housing receives a reciprocable spool and has a chamber which can receive pressurized fluid from a pump by way of a pilot valve to thereby move the spool from a neutral position to an intermediate

position and thereupon to one of several operative positions. The fluid pressure in the chamber acts against one end face of a piston which is mounted in the body of the pilot valve and can be displaced by a control spring which can be deformed by a manually operated handle. A relatively minor deformation of the control spring suffices to move the spool to the intermediate position so that the spring can undergo a much





larger additional deformation in order to move the spool to a selected operative position. A regulating spring in the housing of the regulating valve does not oppose the movement of the spool to intermediate position but the regulating spring offers a substantial resistance to movement of the spool to an operative position. This enables the operator to sense that the control spring offers a greatly increased resistance to further deformation by the handle.

3,766,945

FLUIDIC SYSTEM FOR MIXING TWO FLUIDS

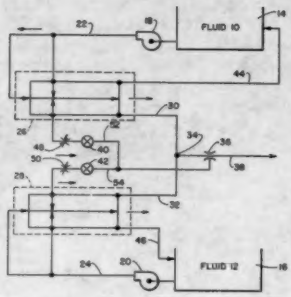
Dharam Pal, Oxnard, Calif., assignor to the United States of America, as represented by the Secretary of the Navy

Filed Apr. 21, 1972, Ser. No. 246,311

Int. Cl. F15c 1/14

U.S. Cl. 137—806 **5 Claims**

A fluidic system for mixing two fluids in fixed or variable proportions including two sources of fluid, a pair of fluid amplifiers and a pressure tap off from a venturi discharge orifice to control the amplifiers. A variable resistor is provided on the control line of each fluid amplifier so that the proportions of



the mixed fluids can be varied at will. With a particular mix ratio setting, the amplifiers assure delivery of the exact proportioned output.

3,766,946

FLAME ADJUSTING DEVICE FOR GAS LIGHTERS

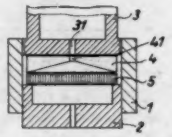
Claus-Christian Corarg, Steinbachtaunus, Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Main, Germany

Continuation of Ser. No. 859,927, Sept. 22, 1969, abandoned. This application Aug. 12, 1971, Ser. No. 171,306

Claims priority, application Luxembourg, Sept. 25, 1968, 56,958

Int. Cl. F15d 1/02

U.S. Cl. 138—44 **3 Claims**



A flame adjusting device of a gas lighter has a disk in the conduit between the fuel tank and the burner valve, which disk is porous and substantially incompressible and is provided with at least one elastic body in pressure contact with a major surface of the disk, and the area of contact between the elastic body and the disk is variable with the pressure exerted therebetween, thereby varying the flow of gas in the conduit.

3,766,947

FLUID TIGHT CLOSURE

Coy D. Osburn, Tulsa, Okla., assignor to T. D. Williamson, Inc., Tulsa Okla.

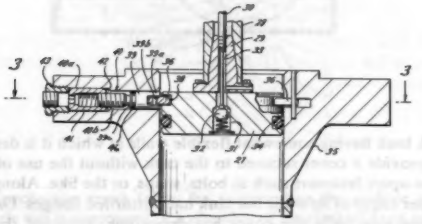
Filed June 5, 1972, Ser. No. 259,832

Int. Cl. F16l 55/10

U.S. Cl. 138—89 **11 Claims**

This invention relates to apparatus for forming a fluid tight closure of an opening in a vessel. The apparatus includes a conduit or fitting adapted to be connected to the vessel, a plug insertable into the conduit and a means for locking the plug in the conduit to prevent the plug from moving out of the conduit. The locking means includes a locking element engageable with the plug to lock it in place. A connector located in a lateral bore through the conduit is connected at one end of the locking element and its other end has a threaded engagement with a nut also located in the lateral bore. Stops are provided at opposite ends of the nut so that upon rotation of the nut to move the connector and locking element between retracted

and locking positions, the nut will alternately engage the stops. By making the distance between the stops greater than the length of the nut, the nut is free to move longitudinally between the stops and this construction avoids maintaining close manufacturing tolerances with respect to the distance between the stops. In a preferred embodiment, the inner stop is provided by a shoulder between an outer larger diameter portion of the bore and an inner smaller diameter portion. A seal is carried by the connector to seal between it and the smaller diameter portion of the bore as the connector is reciprocated by turning the nut. Normally the locking element will engage the conduit when in fully retracted position to limit makeup of the nut on the connector and hence limit the



outward travel of the connector so as to maintain the seal within the smaller diameter portion of the bore. However, if excessive torque is applied to the nut so as to break the engagement of the connector with the locking element, means are provided to limit further makeup of the nut on the connector and the seal is located so as to remain within the smaller diameter portion of the bore when the nut has a maximum makeup on the connector and both have been displaced outwardly so the nut is in engagement with the outer stop. With this construction, the connector does not rotate thereby enabling it to have a simple bifurcated connection with the locking element and to carry a seal which merely slides along the bore in the conduit without rotation. The seal also isolates the threaded connection from fluids within the vessel.

3,766,948

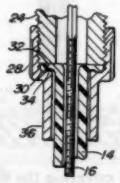
BICYCLE SPEEDOMETER CASING ASSEMBLY

Patrick L. Powell, Franklin Park, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Dec. 6, 1971, Ser. No. 204,840

Int. Cl. F16l *9/00*

U.S. Cl. 138—109 **1 Claim**



The following specification describes a plastic casing for a bicycle speedometer flexible shaft in which the casing ends are cold formed to provide shoulders. The shoulders are engaged by an internal shoulder of a respective nut for attaching the casing to the speedometer and drive unit, respectively, and the nuts each have a rearwardly extending tubular portion for supporting the casing.

3,766,949

HOSES

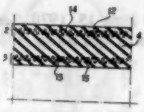
Jacques Joseph Champleboux, and Robert Daniel Delaux, both of Clermont-Ferrand, France, assignors to Pneumatiques, Casutchouc Manufacture Et Plastiques Kleber-Colombes, Colombes, France

Filed Dec. 18, 1970, Ser. No. 99,628

Claims priority, application France, Dec. 19, 1969, 6944301

Int. Cl. F16l *11/08*

U.S. Cl. 138—133 **11 Claims**



This invention relates to hoses reinforced by metal cables. According to the invention, the reinforcement comprises two or more cables separated by a rubber layer, these cables being helically wound to form, with the axial direction of the hose, an angle equal to or greater than 70°, and preferably equal to or greater than 80°. The layers are crossed and the cables of one layer form, with the hose axial direction, an angle equal to and of sense opposite to that of said axial direction and the cables of said other layer. Supplementary reinforcement may be provided, if required, and comprising an extra thicker metal wire that is helically wound so that its convolutions form an angle not less than 80° with the hose axis or, alternatively, laminated rings located at right angles to the hose axis and constituted by concentric windings of metal strips: such supplementary reinforcement is located in the rubber layer located between the said cable layers.

3,766,950

METHOD OF AND APPARATUS FOR WAVE-WEAVING

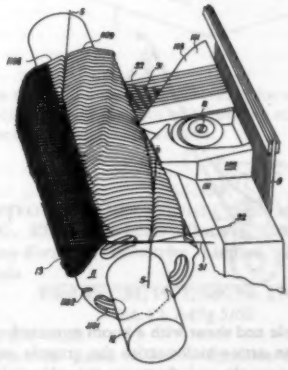
Vitezslav Vasek; Frantisek Jekl; Stanislav Nosek, and Zdenek Pospisil, all of Usti nad Orlici, Czechoslovakia, assignors to Vyzkumny ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed Apr. 23, 1971, Ser. No. 136,935

Claims priority, application Czechoslovakia, Apr. 28, 1970, 2948/70

Int. Cl. D03d *47/26*

U.S. Cl. 139—12 **13 Claims**



Method of and apparatus for weaving in wave-weaving machines with mechanical weft shutters and a rotary reed.

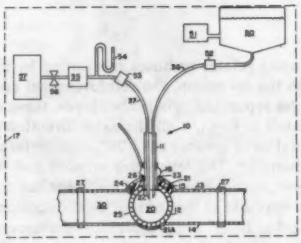
The time sequences of the operations of weft insertion and shed cleaning overlap the beat-up of the preceding weft. The course of phases in constituting the fabric is terminated by the transfer of the weft to the fabric fell, this time interval covering the repeated beat-up of the preceding weft and the binding of the inserted weft by the warp.

3,766,951

RADIOISOTOPIC NONCONTAMINATING FUEL CAPSULE LOADING SYSTEMS

Harry E. Rexford, and Douglas G. Harvey, both of Nashua, N.H., assignors to Sanders Nuclear Corporation, Nashua, N.H.

Filed June 15, 1970, Ser. No. 46,321
Int. Cl. B21d *21/00;* **B23p** *19/04;* **B65b** *31/02*
U.S. Cl. 141—37 **6 Claims**



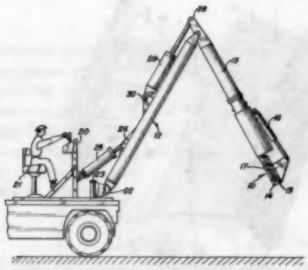
Fueling systems and methods for loading radioisotopic fuel capsules provide for efficient fuel loading without contaminating the exterior surface of the fuel capsules. The systems comprise clamp means, for holding a capsule during a fueling operation, preferably having cooling means associated with the clamp means. A fueling tool receives radioisotopic fuel in microsphere form and passes the fuel into the fuel chamber through a fill opening provided by the capsule. At least one compression seal is formed between the fueling tool and the capsule to prevent undesired leakage of the microspheres. Preferably the fueling tool has a self sealing plug through which a fill tube can be passed during fueling with the tube later withdrawn to cause sealing of the plug preferably prior to removal of the fueling tool.

3,766,952

HYDRAULIC GRAPPLE AND SHEAR

Franklin J. Boers, Box 12, Lacon, Ill.

Filed Oct. 7, 1971, Ser. No. 187,304
Int. Cl. A01g *23/02*
U.S. Cl. 144—34 R **10 Claims**



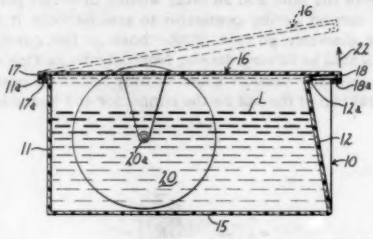
A mobile grapple and shear with a boom mounted on a carrier and having an arm which carries the grapple and shear mechanism. The grapple and shear are movable axially and rotatably with respect to the arm to hold, carry or cut objects, as desired. A piston and cylinder actuator for the grapple and shear has a piston rod with a spiral cam engaged by a fixed follower, causing the piston rod to rotate as it reciprocates.

3,766,953

COVERED TANK OR THE LIKE

Thomas D. Wilson, Morris, Ala.

Filed Dec. 27, 1971, Ser. No. 212,209
Int. Cl. B65d *1/00*
U.S. Cl. 150—0.5 **2 Claims**



A tank having somewhat flexible walls in which it is desired to provide a cover secured to the tank without the use of any take-apart fasteners such as bolts, snaps, or the like. Along the upper edges of its walls the tank has outturned flanges. On opposite side walls the cover has depending, inturned flanges which when the cover is in place, rest under the flanges of the tank. One of the inturned flanges of the cover is cut away at its ends, whereby when the upper end of the adjacent tank wall is pushed inwardly the cover may be removed.

3,766,954

FLETCHING COVER

Gerald F. Gentellalli, 8817 La Mesa Blvd., La Mesa, Calif.

Filed Aug. 23, 1971, Ser. No. 173,841
Int. Cl. B65d *65/02*
U.S. Cl. 150—52 R **3 Claims**

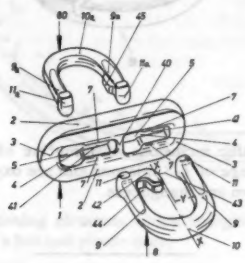
A fletching cover for covering the fletchings of arrows carried in a quiver constructed of a soft resilient cloth with an elastic band at the top and bottom thereof and a plurality of patches of Velcro fastening for the closure thereof around the fletchings of the arrows; a plurality of stainless steel bands stitched in the cloth for flexing the cover away from the arrow fletchings while the elastic bands at the top and bottom thereof close the cover around the arrow shafts and the tops of the arrows; and a metallic clip disposed on the bottom edge of the cover for attachment to one of the arrows in the quiver.

3,766,955

PROTECTIVE MESH FABRIC FOR VEHICLE TIRES

Karl-Heinz Wessel, Belecke-Mohne, and Herbert Sobota, Warstein, both of Germany, assignors to Siepmann-Werke K.G., Belecke/Mohne, Germany

Filed May 17, 1972, Ser. No. 253,926
Claims priority, application Germany, July 29, 1971, P 21 37 944.2
Int. Cl. B60c 27/00
U.S. Cl. 152—171 15 Claims



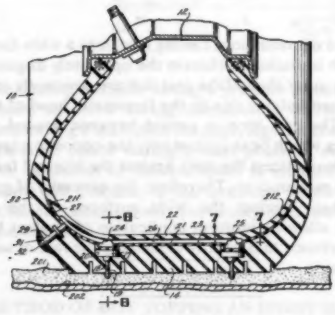
A protective mesh fabric for surrounding the surface of a vehicle tire is composed of a plurality of interlinked units each having a circumferentially complete annular first member provided with an aperture, a substantially U-shaped second member whose legs are to be inserted into the aperture from one side, and a substantially G-shaped third member whose legs are to be inserted into the aperture from the other side, with a hook-shaped arresting portion being provided on the third member which arrests the second and third members and prevents their undesired withdrawal from the aperture of the first member.

3,766,956

TIRE STRUCTURE

George W. Ruane, 165 W. McMillan St., Cincinnati, Ohio, and George W. Tracy, Jr., 11742 Culver Blvd., Culver City, Calif.

Filed Sept. 13, 1971, Ser. No. 179,773
Int. Cl. B60c 11/14
U.S. Cl. 152—208 4 Claims



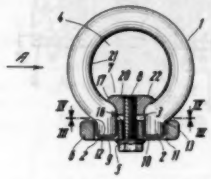
A vehicle tire having reciprocating studs. A diaphragm mounted inside the tire engages heads of the studs and when air under pressure is introduced between the diaphragm and a boot mounted thereinside, portions of the diaphragm engaging the heads of the studs advance outwardly driving the studs to operative position.

3,766,957

CLOSURE MEMBER FOR ANTISKID TIRE CHAINS

Gunter Witzel, Aalen, Germany, assignor to Eisen-und Drahtwerk Erlau Aktiengesellschaft, Aalen, Germany

Filed Dec. 8, 1971, Ser. No. 206,104
Claims priority, application Germany, Dec. 12, 1970, P 20 61 395.0
Int. Cl. B60c 27/00
U.S. Cl. 152—242 26 Claims



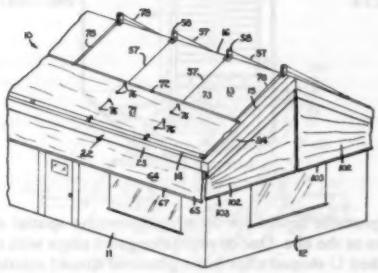
A closure member for a tire chain, and a tire chain comprising a plurality of such closure members, according to which each of the closure members comprises an open ring portion which at its free ends forms an insert opening for the introduction of chain links to be interconnected while at the ends a closure element is detachably arranged which positively extends around the ends and closes the insert opening.

3,766,958

FIRE PROTECTION DEVICE FOR BUILDING STRUCTURE

Norman D. Mitchell, P.O. Box 1735, Orofino, Idaho

Filed June 18, 1971, Ser. No. 154,515
Int. Cl. A47h 5/032
U.S. Cl. 160—84 R 6 Claims



A fire protection device is described for unfurling a fire resistant curtain over the roof of a building structure to protect the structure from an adjacent fire.

3,766,959

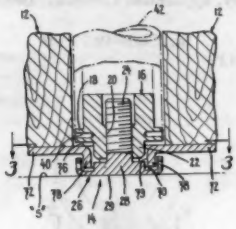
PIVOTED PANEL CONNECTION AND HINGE

Ernst G. Himsl, Kitchener, Ontario, Canada, assignor to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada

Filed Aug. 31, 1971, Ser. No. 176,674
Int. Cl. A47g 5/00
U.S. Cl. 160—135 8 Claims

A structural panel assembly includes a plurality of individual panel members hingedly connected one to each other by means of a common fulcrum-type hinge assembly which provides a 360° orientation for each of the individual panel members. The common fulcrum-type hinge assembly is composed of a pair of threaded members comprising a male por-

tion and a female portion. The head of the male portion is circumferentially axially recessed to provide a circumferential retaining channel, and each of the panel members is provided



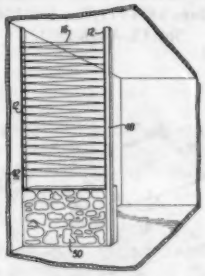
with lugs at each of their corners which are adapted to fit the circumferential channel in the head of the male member of the hinge assembly for retainment of the individual panel members in various angular positions relative to each other.

3,766,960

PORTABLE DEVICE

Joseph J. McLaughlin, Jr., 5546 Karen-Elaine Dr., New Carrollton, Md.

Filed Apr. 11, 1972, Ser. No. 243,364
Int. Cl. A47g 5/00
U.S. Cl. 160—405 4 Claims



A portable device for creating decorative spatial effects in homes or the like. One or more elongated strips with rotatably attached U-shaped clips in longitudinal spaced relationship is provided. By stringing cord continuously from clips in one strip to clips in another strip which is spaced apart, an inexpensive and visually aesthetic room divider can be developed.

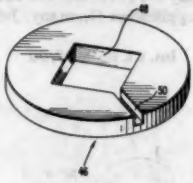
3,766,961

APPARATUS FOR CONTINUOUSLY CASTING STEEL

Robert L. Bunting, Jr., Wanakah; Theodore C. Ring, Dunkirk; Joseph D'Amato, and Witold M. Wojcik, both of Fredonia, all of N.Y., assignors to Roblin Industries, Inc., Buffalo, N.Y.

Filed Sept. 4, 1969, Ser. No. 855,119
Int. Cl. B22d 21/02, 23/00
U.S. Cl. 164—66 1 Claim

The tundish-to-mold stream in a continuous casting apparatus is provided with an inert, protective atmosphere and aluminum wire is introduced into the steel by means of a feed tube mounted in the mold. The wire is fed to the region at which the tundish-to-mold stream joins the pool of molten metal in the mold. The rate of aluminum feed is controlled to introduce from 0.01 – 0.08 percent aluminum and the chemistry of the steel is controlled to provide from 0.010 – 0.025 percent sulfur and a detectable amount of calcium in solution.



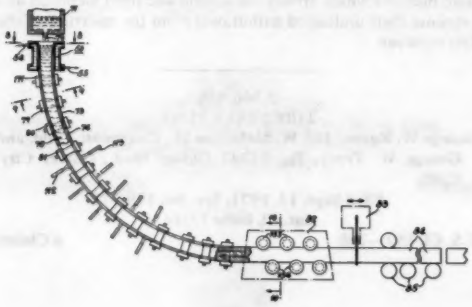
The non-metallic inclusions resulting are of globular, small size, in the range of 1–3 microns and are oxy-sulfides of aluminum, calcium and manganese.

3,766,962

METHOD OF CONTINUOUSLY CASTING A SLAB

Irving Rossi, Dunros Farm, James St., Morristown, N.J.

Filed Feb. 1, 1971, Ser. No. 111,488
Int. Cl. B22d 11/10
U.S. Cl. 164—82 13 Claims



A method of continuous casting steel into a wide-faced continuous slab is disclosed wherein the oppositely disposed wide faces of the outer shell of the cast slab are concavely arched to resist outward bulging due to the ferrostatic head of the molten core. The cast strip is passed between spaced pairs of guide rollers which bear against only the opposite edges of the strip and also buttress the strip against the internal ferrostatic head of the molten core. Therefore, the necessity of guide rollers that bear against the wide surfaces of the strip is eliminated, allowing uniform application of coolant liquid to the wide surfaces, thus greatly enhancing the rate of solidification of the strip.

3,766,963

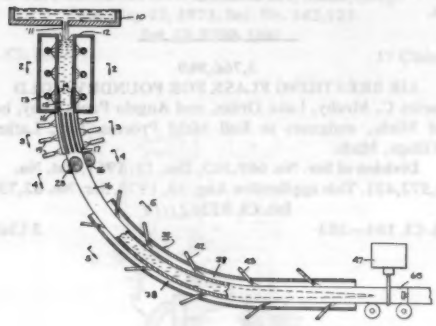
CONTINUOUS CASTING METHODS AND APPARATUS

Irving Rossi, Morristown, N.J., assignor to Innocent Santeusatacchio S.P.A., Milan, Italy

Filed Apr. 23, 1971, Ser. No. 136,814
Int. Cl. B22d 11/12
U.S. Cl. 164—89 13 Claims

Continuous casting of strands wherein the strand after emerging from beneath a mold is gripped by power driven rol-

lers and forced downwardly through guide elements defining a curved path to a horizontal direction of strand movement and



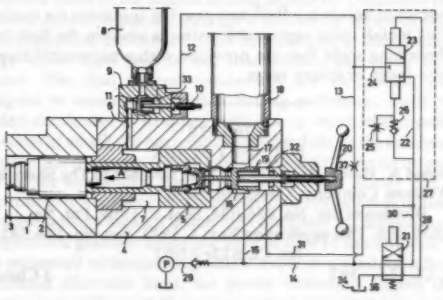
through straightening elements which straighten the strand while it is still in a hot and plastic state.

3,766,964

METHOD OF CONTROLLING THE CONNECTION OF THE MULTIPLIER ON THE PRESSURE PISTON OF A MULTIPLE PRESSURE CASTING MACHINE

Friedrich Bohnlein, and Georg Stollmann, both of Brescia, Italy, assignor to Idra-Pressen G.m.b.H., Stuttgart, Germany

Filed Nov. 22, 1971, Ser. No. 201,075
Int. Cl. B22d 27/10; B29f 1/06
U.S. Cl. 164—120 **4 Claims**



In a die-casting machine having a pressure piston for applying pressure to metal during introduction thereof into the mould and having a multiplier for applying an increased thrust to the pressure piston during a final phase of each casting operation, actuation of the multiplier is effected in dependence upon the position of the pressure piston during its stroke, thus eliminating costly previously used timing and actuation mechanism.

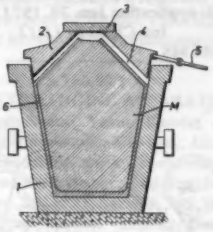
3,766,965

METHOD OF HOT TOPPING AN INGOT MOLD

Enn Vallak, 15, rue Sautter, Geneva, Switzerland

Filed Aug. 31, 1971, Ser. No. 176,580
Claims priority, application Sweden, Sept. 8, 1970, 12189/70
Int. Cl. B22d 7/10, 27/06
U.S. Cl. 164—123 **13 Claims**

The disclosure refers to a method for casting metal in an ingot mould by using a case or hot top to prevent pipe-formation in the ingot. The case or hot top is placed on or in the upper part of the mould and in contact with this part. The mould is filled with metal and then the case or hot top is moved off from the top of the ingot when a thin layer has



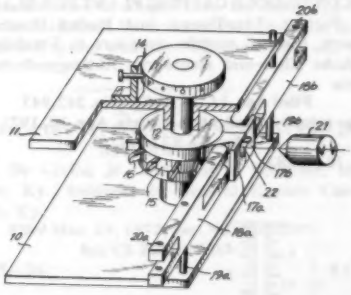
solidified at the top of the ingot but before the ingot has completely solidified, in order to effect an air gap which is limited outwardly by the case or hot top and/or by a separate jacket.

3,766,966

APPARATUS FOR THE MANUFACTURE OF PATTERNS OR MODELS OF SYNTHETIC MATERIAL FOR PRECISION FOUNDRY CASTINGS

Pierre Perisse, Riorimas, Haute-Garonne, France

Division of Ser. No. 711,112, is a continuation-in-part of Ser. No. 573,925, Aug. 22, 1966, abandoned. This application Feb. 22, 1971, Ser. No. 117,804
Int. Cl. B29f 1/10; B22c 7/02
U.S. Cl. 164—249 **4 Claims**

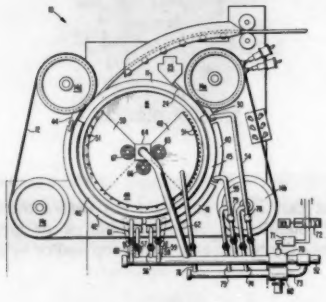


An apparatus for manufacturing blade wheel patterns from synthetic material in which a hub of a pattern to be manufactured is intermittently rotated to bring the locations at which the blades are to be affixed adjacent a molding station. A two-part mold is supported at the molding station by respective crank arms which are periodically operated first to apply the mold parts together on the hub of the pattern so that synthetic material can be injected into a molding cavity in the parts to form a blade affixed on the surface of the hub and second to separate the mold parts and lift them away from the surface of the hub so that the hub with the blade thereon can now be rotated to bring the next location at which a blade is to be affixed to the mold station.

3,766,967
APPARATUS FOR PRELIMINARY COOLING OF CONTINUOUS CASTING MACHINE

George C. Ward, and George E. Lenaeus, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Division of Ser. No. 806,915, March 13, 1969, Pat. No. 3,596,702. This application Jan. 20, 1971, Ser. No. 107,918
Int. Cl. B22d *11/12*
U.S. Cl. 164—283 MS 5 Claims

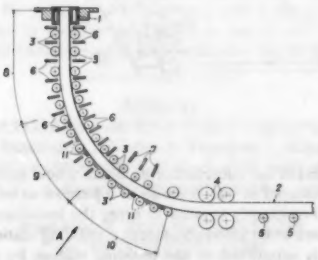


An apparatus for cooling a continuous casting machine during the preliminary stages of casting molten metal, in which coolant is sprayed at a relatively low velocity onto the external surfaces of the flexible band and casting wheel which form the mold into which the molten metal is poured. The coolant is applied at the relatively low velocity prior to and during the initial pouring of the molten metal, and when the operator of the casting machine has established a proper constant level of molten metal in the mold and the hazard of splashing and explosion of the molten metal has been reduced, the coolant is applied at increased velocities and volumes and the rate of casting the molten metal is increased.

3,766,968
CONTINUOUS CASTING PLANT FOR SLABS

Walter Fortner, Linz/Donau, and Rudlof Hoscher, Linz-Dornach, both of Austria, assignors to Vereinigte Osterreichische Eisen-und stahlwerke Aktiengesellschaft, Linz, Austria

Filed Apr. 11, 1972, Ser. No. 242,947
Claims priority, application Austria, Apr. 30, 1971, 3728
Int. Cl. B22d *11/12*
U.S. Cl. 164—283 5 Claims

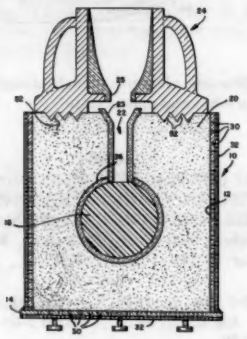


The invention relates to a continuous casting plant wherein a cooling means is provided which includes, apart from customary nozzles, flat ray nozzles which are arranged at a distance of the slab guided in a supporting and guiding structure between rollers so as to be parallel to the width of said slab, the longitudinal axes of said flat ray nozzles extending parallel to the axes of the rollers. By means of these flat ray nozzles it becomes possible to spray the underside of the bar and the rollers in a uniform and plane manner. A satisfactory cooling is acheived also when the bar owing to skrinkage lifts off the rollers.

3,766,969
AIR BREATHING FLASK FOR FOUNDRY MOLD

Charles C. Mezby, Lake Orion, and Angelo Paoli, Troy, both of Mich., assignors to Full Mold Process, Inc., Lathrup Village, Mich.

Division of Ser. No. 689,363, Dec. 11, 1967, Pat. No. 3,572,421. This application Aug. 10, 1970, Ser. No. 62,730
Int. Cl. B22c *21/14*
U.S. Cl. 164—383 3 Claims

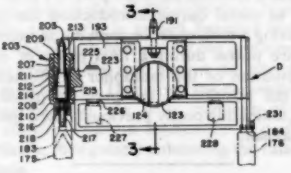


Disclosed herein is a flask and pouring apparatus for casting molten metals using vaporizable patterns wherein the flask has air breathing walls that are provided with a permeable layer, slotted vents, or screen vents.

3,766,970
FOUNDRY FLASK

Edmond K. Hatch, Brecksville, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Division of Ser. No. 856,034, Sept. 8, 1969, Pat. No. 3,630,268. This application Nov. 1, 1971, Ser. No. 194,582
Int. Cl. B22c *21/02*
U.S. Cl. 164—392 3 Claims

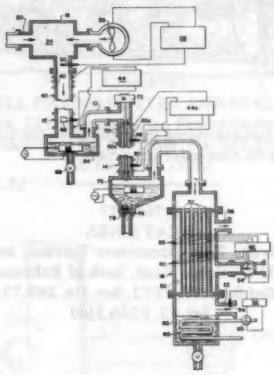


A foundry flask which may find utility in machines which produce flaskless molds includes four walls with vertically extending pins interconnecting the walls at diagonally opposite corners, such pins including a tapered portion cooperating with tapered bushings on one of the adjoining walls so that vertical movement of the pins will separate the tapered portion and bushing, permitting resilient spacers to separate adjoining walls to facilitate removal of a mold from the flask.

3,766,971
APPARATUS FOR REMOVING POLLUTANTS FROM STACK EFFLUENTS

Edward J. Baum, 1900 S.W. Pheasant Dr., Aloha, Oreg.

Filed May 13, 1971, Ser. No. 143,125
Int. Cl. F28b 3/00
U.S. Cl. 165—1 17 Claims

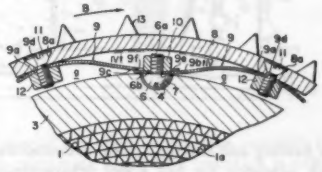


A series of controlled gradient condensers for removing gaseous hydrocarbon pollutants from the stack effluent of an industrial treating plant, such as a veneer dryer. The gaseous effluent stream is conducted from the industrial treating plant to a pre-cooler to bring the effluent temperature to the condensation point of the highest boiling pollutant. Thereafter the effluent stream is passed through a successive series of controlled gradient condenser, each operating in a temperature range lower than that of the immediately preceding condenser. The first several condensers are air cooled and designed to remove the higher boiling pollutants. Each air cooled condenser is wrapped with one or more heater coils, the turns of which are not uniformly wound about the condenser tubes but are more widely spaced toward the outlet or cold end of the condenser. Electric power to each heater coil is controlled by a respective power controller responsive to temperature sensors located inside the condenser for measuring a temperature gradient along the path of flow of the effluent. If any measured temperature gradient exceeds a predetermined maximum allowable limit, the power controller adjusts the electric power through the appropriate heater coil to restore the temperature gradient, and thus the cooling rate, to a value below the maximum limit. As long as the predetermined maximum temperature gradient or cooling rate for each gaseous pollutant is not exceeded the formation of aerosol is avoided and substantially all of the pollutant condenses in collectable liquid form on the walls of the condenser, thereby cleansing the effluent. Each condenser has a reservoir which collects the condensed pollutants by gravity feed, while the uncondensed remaining effluent passes to the next succeeding condenser. The last in the series of condensers is water cooled for condensing those pollutants having the lowest boiling points. The temperature gradient in the water cooled condenser is controlled by temperature sensors, similar to those in the air cooled condensers, which modulate the flow of coolant by controlling the power to the coolant pump. The different temperature ranges at which the respective condensers operate are preferably fixed so that the minimum temperature at the outlet of a respective condenser is greater than the highest melting point of any pollutant condensed within that condenser, so as to prevent solidification of the pollutants and fouling of the condensers. Immersion heaters in the condenser reservoirs further aid in preventing solidification. If solidification of one or more pollutants collected in a particular condenser cannot be avoided, scraper paddles are provided to scrape the solid material off the condenser walls for disposal through a solids removal port. The reservoir of the last in the series of condensers, from which the remaining effluent is vented to the atmosphere, includes a reservoir auxiliary cooling system for the purpose of further reducing effluent temperature if necessary to remove any remaining contaminants.

3,766,972
HEAT EXCHANGING APPARATUS

Masao Kitano, Nagoya, and Yasuo Kondo, Anjo, both of Japan, assignors to Nippondenso Co. Ltd., Aichi-ken; Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi and Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Filed Dec. 20, 1971, Ser. No. 209,706
Claims priority, application Japan, Dec. 26, 1970, 45/128993
Int. Cl. F28d 19/04
U.S. Cl. 165—8 6 Claims

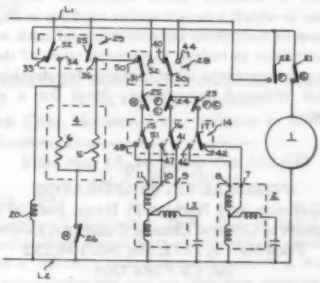


A heat exchanging apparatus having a disc-like body of a perforated material adapted to be rotated in heat transfer contact with fluids to be heat-exchanged. A drive ring is provided concentrically around the disc-like body. The drive ring is drivingly connected to the disc-like body by means of a plurality of arcuate leaf springs mounted therebetwen and each secured at its central portion to the drive ring and at its one end to the disc-like body. The other end of each spring is slidable a distance with respect to the disc-like body circumferentially thereof to prevent buckling deformation of the other end due to compression force imparted by the drive ring. The transmission of torque from the drive ring to the disc-like body is effected by virtue of the tension in the one end of each leaf spring whereby buckling of the one end is prevented.

3,766,973
CONTROL CIRCUIT FOR HEATING AND COOLING APPARATUS

Richard J. De Grella, Jr., and Paul D. Schrader, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Mar. 15, 1972, Ser. No. 234,714
Int. Cl. F25h 29/00
U.S. Cl. 165—26 6 Claims



Control circuitry for controlling the operation of multiple-speed fan means in a combination refrigeration cooling and

electrical heating system includes a multiple-pole, double-throw relay for selecting the heating and cooling modes of operation, the operation of the relay being controlled through the electrical heating means.

3,766,974

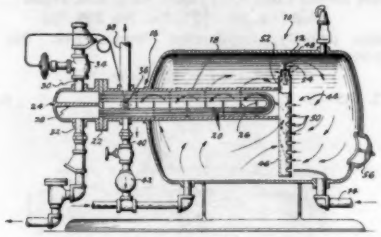
WATER HEATING AND SUPPLY SYSTEM

Robert F. Kirschner, Lakeville, Mass., assignor to The Patterson-Kelley Co., Inc., Stroudsburg, Pa.

Filed Aug. 23, 1971, Ser. No. 174,090. The portion of the term of this patent subsequent to Dec. 21, 1988, has been disclaimed.

Int. Cl. F24h *01/18*

U.S. Cl. 165—39 **14 Claims**



A water heating and storage system accommodating occasional peak demands for hot water, characterized by the utilization of a relatively small sized heated water storage tank and means to maximize efficiencies of the heat exchanger associated therewith and to insure delivery of properly heated water during both peak and normal demand periods.

3,766,975

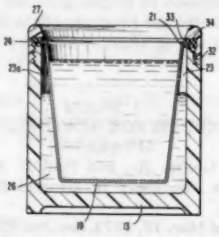
DRINKING RECEPTACLE

Gary P. Todd, 1716 Mark Ln., Charleston, S.C.

Filed Sept. 17, 1970, Ser. No. 73,053

Int. Cl. F28d *1/06*

U.S. Cl. 165—74 **6 Claims**



A drinking receptacle including an outer shell of insulating material and a metallic inner container with a cavity therebetween in which a heat transfer medium is disposed for the absorption of heat from potable material such as hot coffee in the container to reduce the temperature of the potable material to a temperature level suitable for drinking and to maintain this reduced temperature level for a prolonged period of time.

3,766,976

INTEGRAL FIN EVAPORATOR

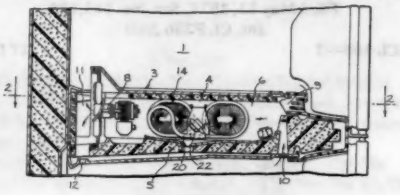
Robert B. Gelbard, and Norbert P. Haag, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Nov. 1, 1971, Ser. No. 194,232

Int. Cl. F24h *3/06*

U.S. Cl. 165—122 **11 Claims**

A compact evaporator unit for refrigerators comprising a tubular member having an extended heat exchange surface in the form of a longitudinally extending flange slit to form a plurality of pin fins, the tubular member being helically coiled



with all of the fins extending inwardly from the coils to provide a unit having a fin-free exterior surface.

3,766,977

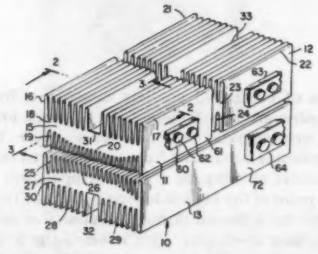
HEAT SINKS

Milton F. Pravda, 7708 Greenview Terrace, and Walter B. Bienert, 7003 Kenleigh Road, both of Baltimore, Md.

Filed Sept. 15, 1972, Ser. No. 289,731

Int. Cl. F24h *3/08*

U.S. Cl. 165—47 **10 Claims**



Improved heat sinks, especially aluminum heat sinks, are provided for cooling heat-producing electrical and electronic components, such as diodes and thyristors, including SCR (silicon controlled rectifier) type semiconductors.

3,766,978

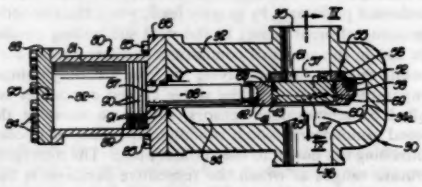
REMOTE CONTROLLED OIL WELL PIPE SHEAR AND SHUT-OFF APPARATUS

Valdek J. Orund, Anaheim, and Edward T. Cugini, Brea, both of Calif., assignors to Shaffer Tool Works, Brea, Calif.

Division of Ser. No. 806,516, March 12, 1969, Pat. No. 3,590,920. This application July 2, 1970, Ser. No. 60,964

Int. Cl. E21b *29/00*

U.S. Cl. 166—.5 **1 Claim**



In an offshore oil well production system including a surface platform, a submerged wellhead, and a pipe string interconnecting the wellhead and platform, the provision of a pipe

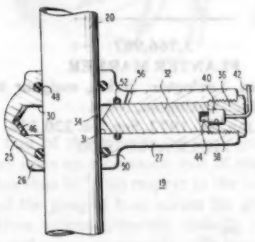
shear and shut-off apparatus between the platform and wellhead having a housing with a through-bore with an enlarged intermediate chamber and end bores for receiving a section of the pipe and means within the apparatus for shearing the pipe and closing the fluid passage through the apparatus when the pipe is severed, means for selective actuation of the apparatus and remote control means for the actuating means which is operative at a remote location from the wellhead notwithstanding the loss of physical connection between the platform and wellhead through the pipe string, such as when the pipe string is ruptured.

3,766,979

WELL CASING CUTTER AND SEALER

John T. Petrick, 21 Ridgemore Cir., Fredericksburg, Va.

Filed Apr. 20, 1972, Ser. No. 245,728
Int. Cl. E21b *29/02*
U.S. Cl. 166—55 9 Claims



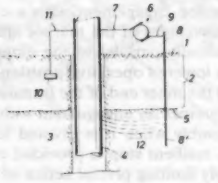
Apparatus for rapidly terminating flow through a well upon sensing of an unsafe well condition. A housing surrounds the well casing and defines a chamber within which a blade is located with its cutting edge adjacent the well casing. An explosive charge positioned against the blade is electrically connected to sensors in the area of the well outlet. When a sensor detects an unsafe condition, the explosive charge is initiated, driving the blade through the well casing without crushing of the casing. When the unsafe condition is corrected, a plug is withdrawn, permitting retraction of the blade and replacement of the explosive charge, thus making the apparatus ready for reuse.

3,766,980

PERMAFROST AND WELL PROTECTION

Loyd R. Kern, Irving, Tex., assignor to Atlantic Richfield & Company, New York, N.Y.

Filed Aug. 7, 1972, Ser. No. 278,552
Int. Cl. E21b *43/00*
U.S. Cl. 166—248 7 Claims



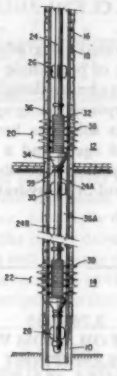
A method for protecting a permafrost zone and a well passing through that permafrost zone wherein a pipe string is placed in said well so as to extend through at least part of said permafrost zone and is heated over its length in said permafrost zone using electrical energy thereby avoiding alternate freezing and thawing of the permafrost and sloughing of the permafrost due to thermal cycling and preventing freeze up of the well itself.

3,766,981

SAND SCREEN SAND SAVER

Ronald J. Rundt, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed Aug. 14, 1972, Ser. No. 280,691
Int. Cl. E21b *33/126*
U.S. Cl. 166—202 5 Claims



This is a special downhole sand screen assembly for oil and other fluids containing sand. This invention is called a sand screen sand saver and was developed especially for use with multi-layer concentric sand screens in which the outer screen has larger openings to retain the coarser sand particles and the openings in the inner screen are progressively smaller to retain the less coarse sand particles. The sand screen sand saver causes the sand to be retained so that it can form a sand pack between the outer screen and the well casing.

3,766,982

METHOD FOR THE IN-SITU TREATMENT OF HYDROCARBONACEOUS MATERIALS

Clarence I. Justheim, Salt Lake City, Utah, assignor to Justheim Petroleum Company, Salt Lake City, Utah

Filed Dec. 27, 1971, Ser. No. 212,659
Int. Cl. E21b *43/24*
U.S. Cl. 166—261 7 Claims

In-situ treatment of oil shale or other hydrocarbonaceous material by an inexpensive hot gaseous fluid, such as air or flue gas, as a heat transfer agent to volatilize kerogen or other hydrocarbonaceous matter and preferably also as a carrier of sufficient heat to crack and fissure the material to make it permeable to gas flow therethrough. Recovery of the volatilized hydrocarbonaceous material is through one or more bore holes remote from the location of hot gas introduction and aided by at least, but preferably, partial hydrogenation within a localized zone between location or locations of hot gas introduction and the one or more bore holes, preferably adjoining the latter.

3,766,983

STABILIZED NONIONIC POLYSACCHARIDE THICKENED WATER

Ying-Chech Chiu, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 15, 1972, Ser. No. 253,420
Int. Cl. E21b *43/16*
U.S. Cl. 166—274 4 Claims

A reservoir oil displacing fluid that is relatively stable toward multivalent metal ions comprises an aqueous liquid solution of a viscosity enhancing amount of a water soluble nonionic polysaccharide and an effective amount of a water soluble metal salt adapted to clarify a calcium ion induced turbidity in that solution.

3,766,984

METHOD FOR TEMPORARILY SEALING A PERMEABLE FORMATION

Kenneth H. Nimerick, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 89,150, Nov. 12, 1970, and a continuation-in-part of Ser. No. 730,578, May 20, 1968, Pat. No. 3,615,794.
This application Jan. 31, 1972, Ser. No. 222,300
Int. Cl. E21b *33/138*
U.S. Cl. 166—294 4 Claims

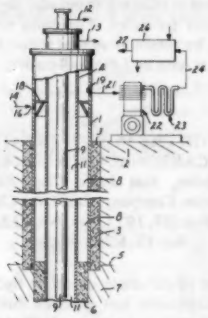
A composition is provided a degradation may be employed for the selective sealing of permeable formations. The composition contains at least one particulate galactomannan gum which is treated with a hydrophobing agent to render the gum hydrophobic in aqueous solutions having a pH of at least about 7.5, a pH control agent and a water-soluble organic polymeric suspending agent. Optionally, a degradation agent, a cross-linking agent and/or a hydration agent can be included.

3,766,985

PRODUCTION OF OIL FROM WELL CASED IN PERMAFROST

Glen Paul Willhite, Lawrence, Kans., assignor to The Kansas University Endowment Association, Lawrence, Kans.

Filed Dec. 1, 1971, Ser. No. 203,605
Int. Cl. E21b *43/24*
U.S. Cl. 166—302 15 Claims



Thawing of permafrost surrounding a surface casing of a wellbore is minimized during production of hot oil by injecting liquid refrigerant in an annulus between the surface casing and the production casing, allowing heat from the hot oil to vaporize the refrigerant as it descends in said annulus, and removing the resulting vaporized refrigerant at the well-head, thereby maintaining the surface casing at a temperature of 32° F. or lower.

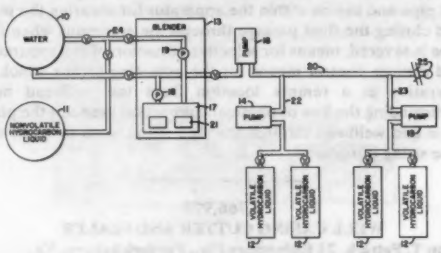
3,766,986

METHOD OF TREATING A WELL USING A VOLATILE HYDROCARBON LIQUID

Othar M. Kiel, Homeworth, Ohio, assignor to Esso Production Research Company, Houston, Tex.

Filed Aug. 18, 1972, Ser. No. 281,696
Int. Cl. E21b *43/26*
U.S. Cl. 166—308 19 Claims

A method for treating a subterranean formation surrounding a wellbore wherein a viscous aqueous liquid containing an emulsifying agent and suspended propping agent particles is mixed with a volatile hydrocarbon liquid at a pressure higher than the vapor pressure of the volatile hydrocarbon liquid, and



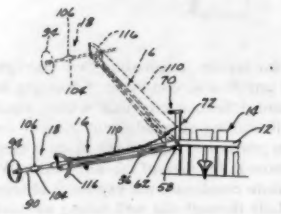
thereafter the mixture is injected through the wellbore and into the formation under conditions to open a fracture in the formation.

3,766,987

PLANTER MARKER

Henry K. Orthman, Lexington, Nebr., assignor to Orthman Manufacturing Inc., Lexington, Nebr.

Filed Jan. 24, 1972, Ser. No. 220,332
Int. Cl. A01b *17/00*
U.S. Cl. 172—126 1 Claim



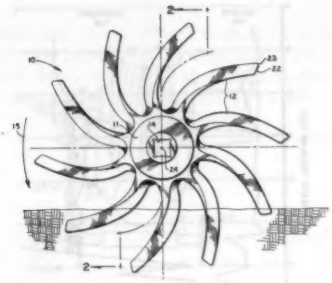
A pair of frame members are interconnected at their opposite ends with the inner ends being connected to the frame of a planter and the outer ends having a pivotal marker arm. One of the frame members is straight while the other frame member includes two portions extending at an angle to the one frame member and interconnected at adjacent ends in spaced relation to the one frame member. A hydraulic cylinder is provided for raising and lowering the frame assembly and is connected to one of a plurality of cross plates in each frame assembly interconnecting elongated side elements. The marker arm includes telescopic portions, one of which is connected to the outer end of the pair of frame members and the other telescopic member extends inwardly beyond the pivotal connection for engagement with a cross element to limit the pivotal movement of the marker arm such that it is maintained substantially parallel to the elongated frame assembly when in its lowered operative position. An upstanding post is provided at the inner end of the frame assembly and includes a resilient bumper for engagement with a cross element on the frame assembly when it is pivoted to its upstanding raised position. A resilient stop is provided on the frame assembly for yieldably limiting pivotal action of the marker arm toward the frame assembly when the frame assembly is in its raised position. An upstanding arcuate element is provided on the marker arm and is connected to a chain extending to the upstanding post such that when the frame assembly is lowered the marker arm is extended and when the frame assembly is raised the marker arm is allowed to pivot downwardly against the yieldable stop element on the frame assembly. A depth-control band is provided on the disk element on the outer end of the marker arm.

3,766,988

ROTARY HOE

Jack C. Whitesides, Columbus, Ga., assignor to Kelley Manufacturing Company, Tifton, Ga.

Filed May 15, 1972, Ser. No. 252,982
Int. Cl. A01b *21/02*
U.S. Cl. 172—548 4 Claims



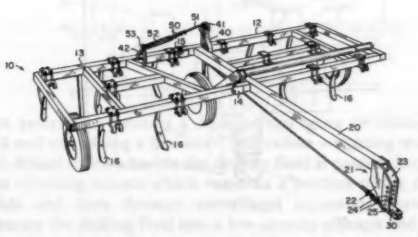
A rotary hoe of the type to be arranged with a gang of similar rotary hoes on a common axis of rotation disposed at an angle other than 90° with respect to the normal direction of movement of the gang of hoes across the ground. A plurality of spaced tines extend generally radially outwardly from a central hub and curve rearwardly with respect to the normal direction of rotation of the rotary hoe and penetrate the ground and move through the ground in a direction generally across the direction of movement of the gang of hoes over the ground. The tines are approximately triangular in cross section and are shaped so that the rotary hoe can be positioned with its plane of rotation disposed at an angle on either side of the direction of movement of the gang of rotary hoes.

3,766,989

STABILIZER ATTACHMENT-DUPLEX-CHISEL PLOW

Jacob H. Lepp, Grimsby, Ontario, Canada, assignor to International Harvester Company, Chicago, Ill.

Filed Sept. 20, 1972, Ser. No. 290,615
Int. Cl. A01b *59/00*
U.S. Cl. 172—605 9 Claims



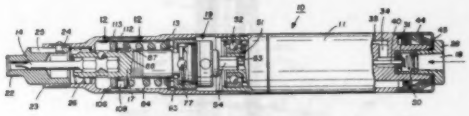
A stabilizer for a multi-section cultivator tool that is hinged along an axis parallel to the direction of travel. The stabilizer causes a portion of the draft force to be directed downwardly at a hinge point thus preventing humping up along the hinge.

3,766,990

LOW TORQUE AUTOMATIC SCREWDRIVER

Richard E. Eckman, and James C. Mitchell, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed June 9, 1971, Ser. No. 151,329
Int. Cl. B25b *23/14*
U.S. Cl. 173—12 18 Claims



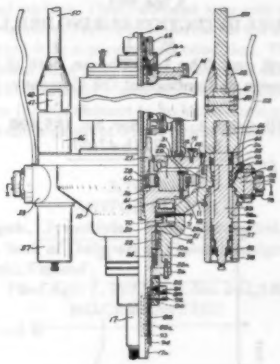
A pneumatic powered screwdriver adapted for moderately high speed operation and automatic shutoff at relative low torque turning resistance. An axially disengagable clutch unit intermediately couples the motor drive to the output drive bit. Contained in the clutch unit is a sear or cutoff member which is cam shifted radially in response to clutch disengagement for enabling air supply interruption to the motor.

3,766,991

ELECTRIC POWER SWIVEL AND SYSTEM FOR USE IN ROTARY WELL DRILLING

Cicero C. Brown, c/o Brown Oil Tool, Inc., P.O. Box 19236, Houston, Tex.

Filed Apr. 2, 1971, Ser. No. 130,597
Int. Cl. E21b *19/16*
U.S. Cl. 173—20 26 Claims



An electric power swivel for rotating and handling drill pipe during well drilling, adapted for use with either conventional drill pipe or larger diameter casing strings and having fluid pressure cushioned suspension means to accommodate vertical movements required in making up and breaking out threaded connections between pipe sections.

3,766,992

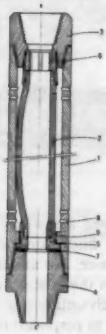
DEVICE FOR AUTOMATIC REGULATION OF THE RUNNING SPEED OF A DRILLING TURBINE THROUGH ELASTIC ACCUMULATOR MEANS

Wladimir Tiraspolsky, Issy-les-Moulineaux; Michel Flamand, Neuilly sur/Seine, and Remi Reynard, Montesson, all of France, assignors to Institut Francais du Petrole

Continuation-in-part of Ser. No. 47,318, June 18, 1970, abandoned. This application Dec. 2, 1971, Ser. No. 204,283
Claims priority, application France, June 27, 1969, 6921932
Int. Cl. E21b *7/00, 3/12*
U.S. Cl. 175—25 13 Claims

Device for automatic regulation of the running speed of a drilling turbine, adapted to compensate for a drop in the pres-

sure power of the drilling fluid through the turbine by an opposite variation of the flow rate of said fluid through the turbine, comprising a tank of elastically expansible volume



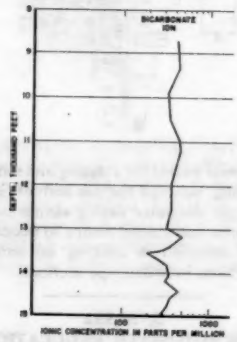
whereinto is applied the pressure of the drilling fluid, said tank being placed upstream with respect to the turbine, in the vicinity thereof and acting as a flow regulating means.

3,766,993

GEOPRESSURE DETECTION DURING DRILLING OF A WELL

Walter H. Fertl, and John L. Hillhouse, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 1, 1971, Ser. No. 185,490
Int. Cl. E21b 47/00
U.S. Cl. 175—50 **5 Claims**



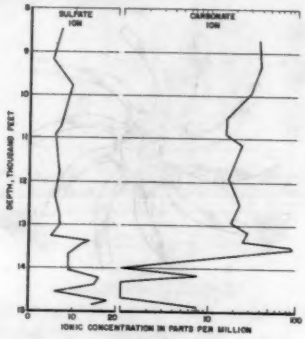
An early warning detection method for predicting abnormal formation pressure, generally geopressure, in subterranean rock strata before it is drilled. The technique is to measure the concentration of the bicarbonate ion in the formation being drilled, while the well is being drilled in the normally pressured rock strata existing above the abnormally pressured formations. When variations are observed in the degree of change of the amount bicarbonate ion present with depth, drilling procedures are altered to meet the requirements of the formation which is about to be penetrated by the drill bit.

3,766,994

ABNORMAL PRESSURE DETECTION DURING DRILLING OF A WELL

Walter H. Fertl, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Oct. 1, 1971, Ser. No. 185,600
Int. Cl. E21b 47/00
U.S. Cl. 175—50 **5 Claims**



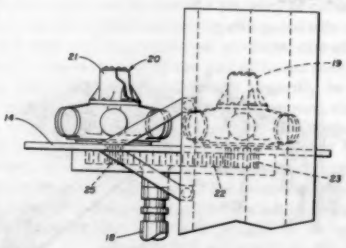
An early warning detection method for predicting abnormal formation pressure in subterranean rock strata before it is drilled. The technique is to measure the concentration of sulfate or carbonate ions in the formation being drilled, while the well is being drilled in the normally pressured rock strata existing above the abnormally pressured formations. When variations are observed in the degree of change of the amount of sulfate or carbonate ions present with depth, drilling procedures are altered to meet the requirements of the formation which is about to be penetrated by the drill bit.

3,766,995

EARTH BORING MACHINE WITH MULTI-MOTOR DRIVE

James W. Young, Irving, and Thomas L. Arrington, Dallas, both of Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 22,768, March 26, 1970, abandoned. This application Oct. 20, 1971, Ser. No. 191,000
Int. Cl. E21c 23/00
U.S. Cl. 175—53 **1 Claim**



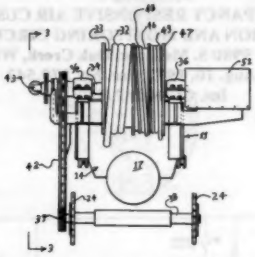
An earth boring method using a multiplicity of motors provides a wide range of rotational torques and speeds for optimum drilling performance. One of the multiplicity of motors is supplied with power to drive the rotary drill string at high speed for drilling a pilot hole with the other motors disengaged from the bull gear. When enlarging the pilot hole into a large diameter hole two or more of the motors are supplied with power and engaged with the bull gear.

3,766,996

DRILLING APPARATUS WITH STORAGE REEL MEANS

David L. Moody, Oneonta; James B. Loftis, Remlap, and James E. Boyle, Birmingham, all of Ala., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Aug. 29, 1972, Ser. No. 284,651
Int. Cl. E21c 7/08
U.S. Cl. 173—57 7 Claims



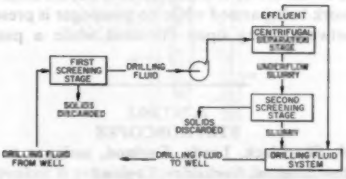
A carriage movable by a power unit along a track and carrying a driven shaft for a hollow drill rod and drive means therefor. A hollow driven shaft is operatively connected to the power unit and rotates in opposite directions in response to movement of the carriage in opposite directions. Reels rotate with the hollow driven shaft and carry flexible air supply and conductor conduits which are reeled in and out in proportion to the distance traveled by the carriage.

3,766,997

METHOD AND APPARATUS FOR TREATING A DRILLING FLUID

Joe K. Heilhecker, Bellaire, and Leon H. Robinson, Houston, both of Tex., assignors to Esso Production Research Company, Houston, Tex.

Continuation of Ser. No. 209,719, Dec. 20, 1971, abandoned.
This application Mar. 2, 1973, Ser. No. 337,617
Int. Cl. E21b 21/00
U.S. Cl. 175—66 21 Claims



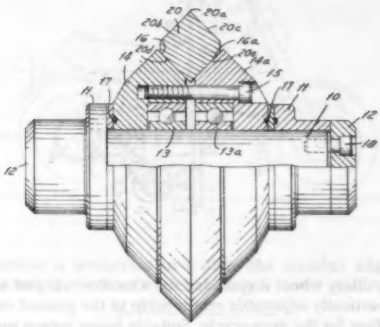
A system for treating a drilling fluid being circulated in a well and containing a fine sized particulate weighting material and drilled solids wherein the drilling fluid is passed through a first vibrating screen which removes a portion of the drilled solids and then through centrifugal separating means to separate the drilling fluid into a low-density effluent and into a high-density underflow slurry; the effluent is returned to the drilling fluid system and the underflow slurry is further processed through a second vibrating screen. The second vibrating screen is substantially finer than the first vibrating screen and functions to remove additional drilled solids. Material passing the second vibrating screen which include most of the weighting material in the underflow slurry is returned to the drilling fluid system.

3,766,998

DISC CUTTER FOR BORING-TYPE MINING MACHINE

Arnold Boyd Bower, Jr., St. Clair Shores, Mich., assignor to General Electric Company, New York, N.Y.

Filed July 17, 1972, Ser. No. 272,409
Int. Cl. E21b 9/14; E21c 13/00
U.S. Cl. 175—373 6 Claims



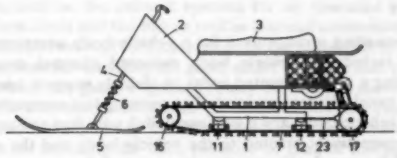
A cutter tool for an earth-boring machine comprises a disc or ring of a metal or alloy having a Rockwell C hardness of at least 60 and having a circumferential cutting edge on its outside surface. The inner surface of the ring, or of a steel liner on which the hard metal ring is mounted, has a tapered cross-sectional configuration. A first annular support engages one of the inner tapered surfaces and a second annular support the other tapered surface. These annular supports may be drawn toward each other to exert a hoop stress on the hard metal ring thereby placing it in a prestressed condition. The hard metal ring, its optional steel liner and the supports constitute an assembly which is rotatably mounted on a shaft. The shaft includes means for attachment to an earth-boring machine with the shaft in axial alignment with a radius of the bore.

3,766,999

MOTOR SLEIGH

Rauno Berguis, Jyvaskyla; Risto Saivosalmi, and Hannu Niskanen, both of Oulu, all of Finland, assignors to Valmet Oy, Helsinki, Finland

Filed Apr. 7, 1972, Ser. No. 242,188
Int. Cl. B62m 27/02
U.S. Cl. 180—5 R 6 Claims



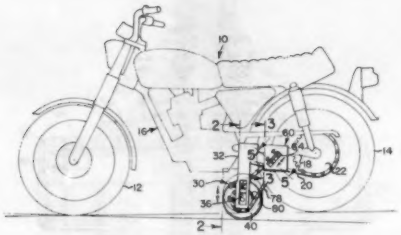
A motor sleigh has a track mat which changes its direction when running over return wheels and two parallel elongated slides rigid in the plane of the track mat and extending parallel to the direction of travel. These slides cause the lower run of the track mat to be braced against the body of the motor sleigh. They carry at least those return wheels which are not involved in power transmission. The slides are braced to the body of the motor sleigh by a leaf spring fixed to the body and having both ends connected to the slides. However, the slides are free to turn about their longitudinal axis.

3,767,000

MOTORCYCLE WITH AUXILIARY WHEEL

Galen W. Smith, 1332 Inman St., Akron, Ohio

Filed Dec. 29, 1971, Ser. No. 213,358
Int. Cl. B60k 25/00
U.S. Cl. 180—16 8 Claims



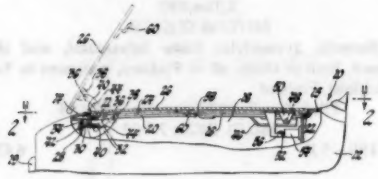
An auxiliary wheel is provided for a motorcycle and is carried in vertically adjustable relationship to the ground or support surface for the motorcycle. Suitable frame means support the wheel on the motorcycle and a drive or power system is provided for releasably engaging the conventional drive system of the cycle and connects to the wheel for driving the same when in road engaging position. The wheel will support the oack portion of the motorcycle and permit its operation when the rear tire of the cycle is flat.

3,767,001

VEHICLE BODY COMPARTMENT PANEL MOUNTING ARRANGEMENT

Ronald Chupick, Warren, Mich., assignor to General Electric Corporation, Detroit, Mich.

Filed Sept. 20, 1971, Ser. No. 182,005
Int. Cl. B62d 25/10
U.S. Cl. 180—69 C 4 Claims



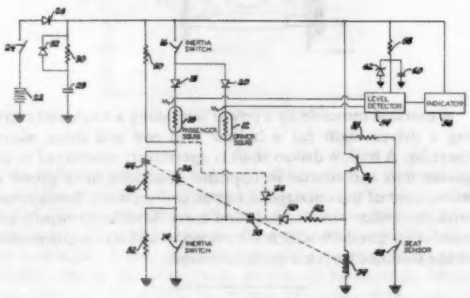
A mounting arrangement for a vehicle body compartment panel includes a vehicle body mounted channel member receiving a panel mounted roller to slidably support one end of the panel adjacent one end of an opening to a compartment of the vehicle body, and a gooseneck link with first and second ends respectively pivoted to the vehicle body and the other end of the panel adjacent the other end of the compartment opening. A helical spring extends between the vehicle body and the link and moves overcenter of the pivotal axis of the first link end to selectively and alternately bias the link about this axis to either a first or second position, while the channel member and roller cooperate with the link during movement between these positions to support the panel for generally translatory movement between closed and partially open positions relative to the compartment opening. The pivotal axis of the second link end to the panel is located above the adjacent confines of the vehicle body when the panel is in the partically open position and the roller is located adjacent an open end of the channel member, allowing the main portion of the panel to pivot upwardly about this axis to a fully open position while a portion of the panel on the opposite side of this axis pivots downwardly. During translation of the panel from the partially open position to the closed position, vehicle body and panel mounted locking elements are slidingly engaged to prevent upward opening movement of the panel and a conventional latch mechanism selectively engages the panel to prevent translation back toward the partially open position.

3,767,002

SEAT OCCUPANCY RESPONSIVE AIR CUSHION ACTUATION AND MONITORING CIRCUIT

Arden G. Gillund, 9980 S. McGraw, Oak Creek, Wis.

Filed Aug. 10, 1972, Ser. No. 279,542
Int. Cl. B60r 21/10
U.S. Cl. 180—102 4 Claims



A circuit for actuating respective air cushions for the driver and passengers of a vehicle in the event of a collision includes relay contacts connected in the series network for firing the squib which controls inflation of the passenger cushion. When the seat is occupied by a passenger, a seat sensor disables the relay controlling the contact and the series network is armed. If no passenger occupies the seat the relay is energized to open circuit the series network and prevent inflation of the passenger cushion in the event of a collision. Monitoring circuitry indicates to the driver if a malfunction occurs such as the series network being armed while no passenger is present or the series network being open circuited while a passenger is present.

3,767,003

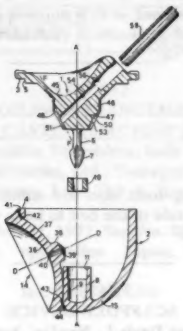
STETHOSCOPES

Roger M. Shacklock, Leeds, England, assignor to Chas. F. Thackray Limited, Yorkshire, England

Filed June 23, 1972, Ser. No. 265,491
Claims priority, application Great Britain, June 29, 1971, 30,388/71
Int. Cl. A61b 7/02
U.S. Cl. 181—24 11 Claims

A stethoscope chest piece comprising a coupling element fitted within a sounding element, the two elements being relatively rotatable about a common axis; the coupling element having at least one air passage therethrough which is capable of being connected at one end to one or more listening tubes and which at its other end opens into a surface which lies in a male surface of revolution about the axis; the sounding element having three or more listening devices each oriented in different directions and each having an air passage therethrough, the air passage of each listening device opening at one end thereof into a surface, and the surfaces of all the listening devices lying in a common female surface of revolu-

tion about the axis, the male and the female surfaces of revolution being complementary so that on relative rotation of the



elements about the axis the or each air passage through the coupling can be placed in communication with the air passage of any selected one of the listening devices.

3,767,004

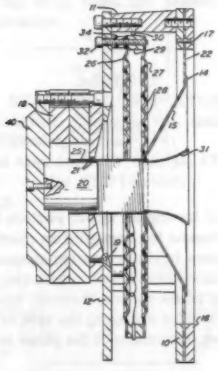
LOUDSPEAKERS

Arthur Liebscher, 252 Wyncote Road, Jenkintown, Pa.

Continuation-in-part of Ser. No. 864,322, Oct. 7, 1969, abandoned. This application Mar. 19, 1971, Ser. No. 126,330

Int. Cl. G10k *13/00*; **H04r** *7/00*

U.S. Cl. 181—32 R **2 Claims**



A loudspeaker is provided in which a thin surround is employed for the speaker cone of impervious foam material, the surround being characterized by omni-directional elastic tension and being secured between the cone and the support.

3,767,005

FLAT LOUDSPEAKER WITH ENHANCED LOW FREQUENCY

Jose Juan Bertagni, Hernandorias 1027, Buenos Aires, Argentina

Filed June 5, 1972, Ser. No. 259,379

Claims priority, application Argentina, June 16, 1971, 236221

Int. Cl. G10k *13/00*; **H04r** *7/00*

U.S. Cl. 181—32 R **10 Claims**

Flat loudspeaker diaphragm with means for enhancing the low frequencies, wherein the diaphragm has a marginal vibration damping portion surrounding a sound producing figure portion and at least a portion of said marginal vibration damping portion is connected to a plate-like member adapted to vibrate only in the low frequency range.

3,767,006

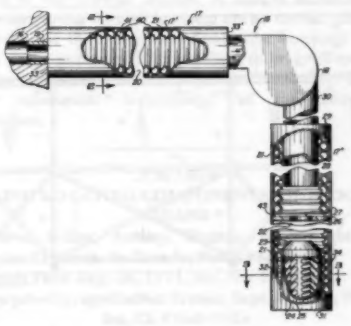
SILENCER FOR GAS DISCHARGING DEVICES EMPLOYING MEANS FOR REDUCING DRAG

Walter E. Perrine, P.O. Box 66, Navajo, Ariz.

Filed Jan. 29, 1973, Ser. No. 327,695

Int. Cl. F01n

U.S. Cl. 181—49 **16 Claims**



A silencer for muffling of noises in a gas pressure exhaust system such as the exhaust systems for air operated power cylinders, tools and the like as well as internal combustion engines of the two- and four-cycle type by the utilization of guiding surfaces for directing the gases under pressure into chambers where the gases acquire a rotary or whirling movement about a stationary axis within the silencer and are expelled after such rotary action has dissipated their energy, aided by means for reducing the back pressure or drag of the guiding surfaces on the gases.

3,767,007

EXTENSIBLE LADDER ASSEMBLY AND AERIAL BASKET THEREFOR

Edward V. Garnett, Anaheim, Calif., assignor to SSP Truck Equipment, Inc., Paramount, Calif.

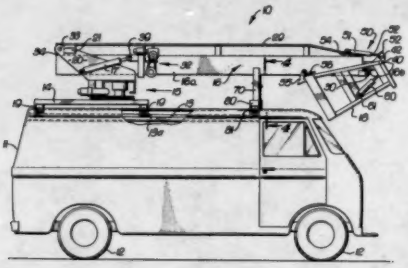
Filed Dec. 10, 1971, Ser. No. 206,753

Int. Cl. B66f *11/04*

U.S. Cl. 182—2 **13 Claims**

An extensible ladder is mounted on a vehicle to be pivotal upward and downward by piston mechanism positioned to the

side of the pivotal path of ladder travel. An aerial basket is pivotally mounted on the ladder which has its motion damped to prevent sudden changes in basket attitude. Included are ar-



rangements for automatically storing the basket on ladder retraction and for supporting the ladder in a rest position over the vehicle roof. The ladder rest arrangement may be positioned to permit depression of the ladder to the vehicle roof.

3,767,008

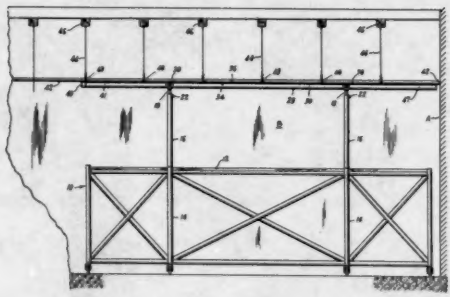
SUSPENSION CEILING ERECTION METHOD AND SUPPORT ASSEMBLY EMPLOYED THEREIN

Dennis G. LeBlanc, 616 Franklin Ave., Hartford, and Norman G. LeBlanc, 224 Nott St., Wethersfield, both of Conn.

Filed Feb. 12, 1971, Ser. No. 114,757

Int. Cl. E04g *1/00*

U.S. Cl. 182—129 **2 Claims**



In a method of erecting a suspended ceiling one end of an elongated support member is positioned with reference to a wall member that is secured at a predetermined height thereon. The support member is adjusted to a horizontal position, and appropriate ceiling grid members are supported between the planar upper surface thereon and a wall member secured to a second wall adjacent to the first. The grid members are fixedly secured to depend from overhead structure in a conventional manner, to support acoustic tiles or other ceiling panels thereon. The assembly employed in the method comprises a scaffold on which the elongated support member is mounted, and includes a leveling device to indicate the relationship between the planar upper surface of the support member and horizontal.

3,767,009

TRAMPOLINE SUPPORT AND CUSHIONING MEANS

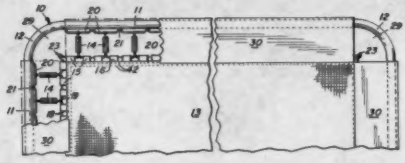
Bruce C. Sidlinger, 208-214 International Rd., Garland, Tex.

Filed Nov. 23, 1971, Ser. No. 201,376

Int. Cl. A62b *1/22;* **A63b** *5/00*

U.S. Cl. 182—139 **11 Claims**

The outer ends of the coil springs holding the trampoline bed are connected with rods arranged parallel with the edges of the bed so that the springs can automatically adjust their positions to maintain their directions at right angles to the bed,



and the supporting rods also are utilized to position the cushions along the side of the bed to keep them from interfering with the springs.

3,767,010

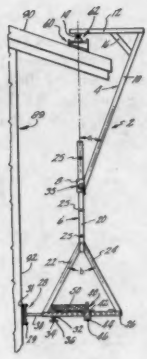
SCAFFOLD DEVICE

John L. Newlan, and Davis L. Newlan, both of 620 42nd St., West Palm Beach, Fla.

Continuation-in-part of Ser. No. 114,135, Feb. 10, 1971, abandoned. This application June 20, 1972, Ser. No. 264,599

Int. Cl. E04g *3/10*

U.S. Cl. 182—150 **8 Claims**



A scaffold device having an upper portion formed of hook shape with a foot means for engaging an overhang of a structure, said foot means having a wedge-shaped cross section, and a lower portion mounted with respect to said upper portion for supporting plank means thereon, said lower portion having bumper means for engaging the side of a structure and means for restricting movement of the plank means.

3,767,011

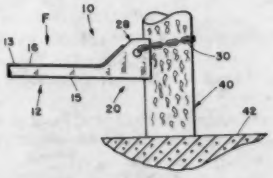
PORTABLE SEAT

Karl J. Witt, 2080 Canada Road, Casnovia Township, Mich.

Filed June 12, 1972, Ser. No. 261,922

Int. Cl. A47c *9/10*

U.S. Cl. 182—187 **11 Claims**



A portable seat includes mounting means having a pair of vertically spaced horizontally extending annular surfaces

adapted to be positioned in contact with a tree trunk or the like and span a circumferential portion of the trunk. Fastening means extends around the trunk and attaches to the mounting bracket near the upper of the annular surfaces. The surfaces are displaced along a vertical axis to hold the seat in a slightly upwardly projecting position with no force thereon such that it will be generally horizontally positioned when in use.

3,767,012

AUTOMATIC OILING ARRANGEMENT OF A DIE-CASTING MACHINE

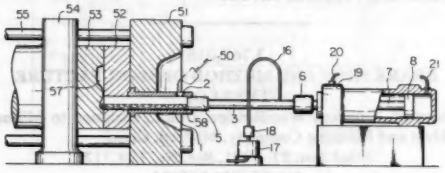
Yuji Jimi, and Takahiko Takeshima, both of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi-ken and Nippon Light Metal Company, Ltd., Tokyo, Japan, part interest to each

Filed Dec. 31, 1971, Ser. No. 207,359

Claims priority, application Japan, Dec. 15, 1970, 45/124740

Int. Cl. F16n *7/00*

U.S. Cl. 184—5 **4 Claims**



On oiling the sliding area existing between the inner surface of a sleeve and the outer surface of a plunger tip, an oil supply to said surface can be made automatically by injecting a lubricant onto the sliding surface during the time of the movement of the plunger tip away from the platen, thus eliminating manual oiling operation.

3,767,013

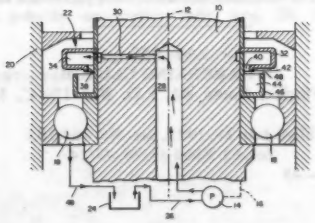
START-UP LUBRICATOR

John Warren Caldwell, Glenside, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 16, 1971, Ser. No. 171,899

Int. Cl. F16n *9/02*

U.S. Cl. 184—6.3 **20 Claims**



A vertical spindle machine having a lubricant pump which is driven in conjunction with the spindle has a lubricator fixedly connected to the spindle for providing the spindle bearings with an initial charge of lubricant upon start-up. This initial charge satisfies the lubricant needs of the bearings until the pump reaches full operating speed, and is delivering a continuous supply of lubricant to the bearings. During rotation of the spindle, the pump delivers the lubricant to the lubricator where a predetermined charge is retained, within a first chamber while the excess flows onto the bearings; upon stopping the spindle rotation, this charge flows from the first chamber into a second chamber of the lubricator where it is available for discharge upon start-up once again.

3,767,014

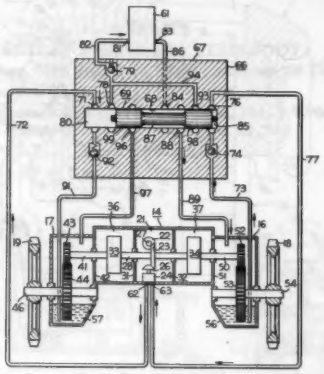
FILTER SYSTEM FOR CRAWLER TRACTOR FINAL DRIVES

Gary A. Drone, Springfield, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 26, 1972, Ser. No. 257,302

Int. Cl. F01m *9/06;* **F16n** *39/06*

U.S. Cl. 184—6.12 **6 Claims**



The lubricating fluid from one of a pair of final drive housings is routed through a filter during forward operation of the crawler tractor and the lubricating fluid from the other final drive housing is routed through the same filter during reverse operation of the crawler tractor. A unique automatic flow control valve and a reversible pump are so connected and arranged with the fluid filter and final drive housings so as to permit a single pump and a single filter to be employed in filtering the lubricating fluid in a pair of final drive housings without substantial interchange of lubricating fluid therebetween.

3,767,015

BRAKING ROTATING COMPONENTS AND COOLING MEANS

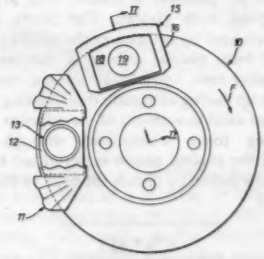
Jean Alfred Odier, Antony, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Aug. 26, 1971, Ser. No. 175,199

Claims priority, application France, Sept. 4, 1970, 7032180

Int. Cl. F16d *65/84*

U.S. Cl. 188—71.6 **9 Claims**



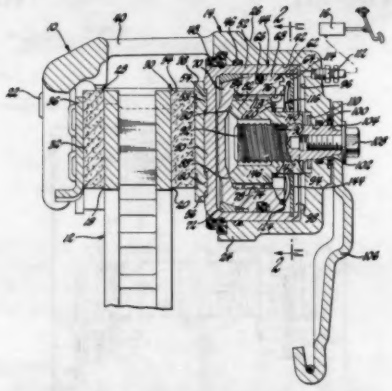
Apparatus having a rotatable component such as a brake disc has braking means capable of applying a braking couple to the rotating component, a heat-collecting shoe for absorbing heat from the component generated by the braking means, and control means operable to urge the shoe towards the rotating component, the control means being operable independently of the braking means.

3,767,016

BRAKE ACTUATOR AND ADJUSTER MECHANISM

Harmon C. Hurt, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 30, 1972, Ser. No. 302,084
Int. Cl. F16d 65/56
U.S. Cl. 188—71.9 4 Claims



A disc brake assembly has a caliper frame formed to provide a cylinder housing containing a hollow piston. A second piston is slidable in the hollow piston and mating clutch surfaces are formed on the two pistons so that they are normally engaged. An adjuster nut is splined in the second piston for relative axial movement and axially engages the second piston in force transmitting relation. The adjuster nut is threaded on a screw or shaft which is rotatably journaled in the housing so that rotation of the shaft imparts axial brake actuating movement to the rotationally stationary adjuster nut, the second piston, and the hollow piston. Conversely, axial force exerted on the adjuster nut in the brake actuating direction tends to cause the nut to move rotatably and axially relative to the shaft. A compression spring has one wavy section exerting a preload between the hollow piston and the second piston to axially load the clutch with a force which is less than that required to lock the hollow piston and the second piston together against relative rotation. The spring has another section acting between the hollow piston and the adjuster nut under a preload which urges the adjuster nut into axial force transmitting engagement with the second piston. A brake shoe assembly associated with the hollow piston locks the hollow piston against rotation in the housing, but may be removed so that both pistons and the adjuster nut can be rotated to reset the entire mechanism when new brake linings are installed. The brake may be pressure actuated, with pressure in the housing acting on both pistons. The brake may also be mechanically actuated by rotation of the shaft to move the adjuster nut and both pistons axially in the brake actuating direction. In either case, upon brake release, any slack which had to be taken up during actuation due to lining wear is taken up by rotary and axial movement of the adjuster nut when the brake actuating force transmitted through the clutch decreases until the second piston is permitted to rotate relative to the hollow piston by clutch slippage under influence of the adjuster nut.

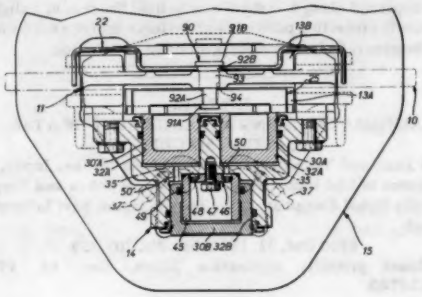
3,767,017

DISC BRAKE WITH PLURAL PISTONS ACTING ON ONE SHOE

Jean Maurice, Paris, France

Filed Feb. 5, 1971, Ser. No. 112,906
Claims priority, application France, Feb. 13, 1970, 7005115
Int. Cl. F16d 55/228
U.S. Cl. 188—72.5 4 Claims

In a disc brake having a rotary disc with brake shoes on opposite sides, a cylinder block for moving the brake shoes includes at least three pistons all arranged on the same side of the disc and movable perpendicular to the disc, two pistons



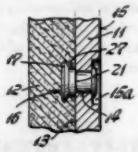
being movable in one direction and the other piston being movable in the opposite direction.

3,767,018

BRAKE SHOE AND METHOD OF MANUFACTURE THEREOF

Robert M. Gordon, Woodbridge, Conn., assignor to Milford Rivet and Machine Company, Milford, Conn.

Filed Jan. 21, 1971, Ser. No. 108,312
Int. Cl. F16d 69/00
U.S. Cl. 188—250 G 2 Claims



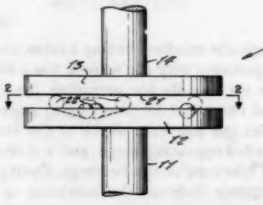
A brake shoe consisting of a friction pad and a metal support with the support having a plurality of shouldered rivets clinched thereto with the friction pad being molded to shape against the support and hardened to have portions encircling the shoulders to mechanically secure the pad to the support.

3,767,019

OVER RUNNING CLUTCH

Frank J. Wingler, Route #3, P.O. Box 170–C, Headland, Ala.

Filed July 21, 1971, Ser. No. 164,783
Int. Cl. F16d 41/06, 43/24
U.S. Cl. 192—45 1 Claim



A clutch mechanism for incorporation in machinery, the clutch being of over running type and comprising a means for transmitting rotational movement between shafts which are

axile aligned with each other, the device consisting of a face plate on each end of the shafts; in one form of the invention, one of the face plates having tapered slots each of which contain a ball movable along the slot for engaging the other face plate; and in another form of the invention the peripherial edge of one of the face plates having tapered slots each of which contains a ball and wherein the balls traveling the slots engage an inner cylindrical face carried by the other face plate.

3,767,020

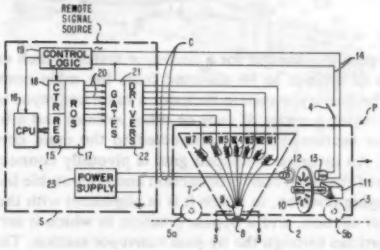
MANUALLY POSITIONABLE AUTOMATIC PRINTER

Thomas H. Rowe, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 2, 1971, Ser. No. 159,309

Int. Cl. B41j *3/02*

U.S. Cl. 197—1 R **4 Claims**



A printing mechanism is mounted within a hand positionable housing. Relative motion between the printing mechanism and the medium on which printing is to be performed is sensed. A control device responds to these movement indicating signals to generate command signals for appropriately actuating the printing mechanism.

3,767,021

CAM ACTUATED SHIFT DEVICE WITH CONTINUOUSLY OPERATED INTERMEDIATE LEVER FOR TYPE-BAR TYPEWRITER

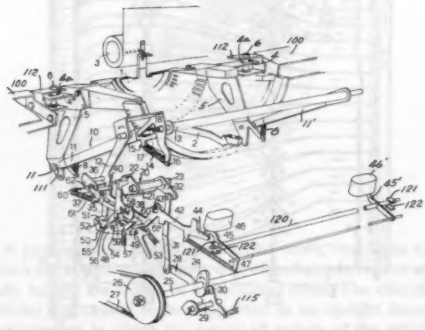
Adriano Menicanti, Ivrea, and Oberto Giacomo, Samone, both of Italy, assignors to Ing. C. Olivetti & C. S.p.A., Ivrea (Torino), Italy

Filed July 28, 1970, Ser. No. 58,871

Claims priority, application Italy, Aug. 20, 1969, 53047 A/69

Int. Cl. B41j *7/50*

U.S. Cl. 197—74 **7 Claims**



A shift device for shifting the type-bar support between the lower-case letters and the capital letters in an electric typewriter. A linkage actuated by the typewriter shift key engages a continuously oscillating means which moves the type-bar support from the lower-case letter position to the capital letter position when the shift key is depressed, and from the capital letter position to the lower-case letter position when the shift key is released.

3,767,022

RETURN SPRING KEY STEM BOOT

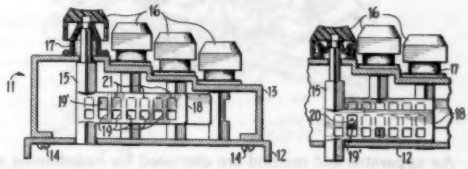
Cecil G. Olson, San Francisco, Calif., assignor to The Singer Company, New York, N.Y.

Continuation of Ser. No. 518,426, Jan. 3, 1966.

Filed Apr. 24, 1970, Ser. No. 29,744

Int. Cl. B41j *5/08*

U.S. Cl. 197—98 **8 Claims**



A stem boot for providing breakaway feel for individual keys of a manually actuated keyboard.

3,767,023

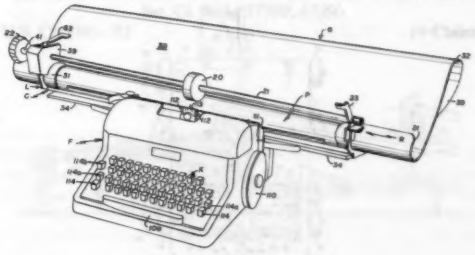
FREE PLATEN TYPEWRITER

Cecil S. Effinger, 828 Pearl St., Boulder, Colo.

Continuation-in-part of Ser. No. 594,025, Nov. 14, 1966, abandoned. This application Nov. 22, 1968, Ser. No. 784,518

Int. Cl. B41j *13/00*

U.S. Cl. 197—127 R **2 Claims**



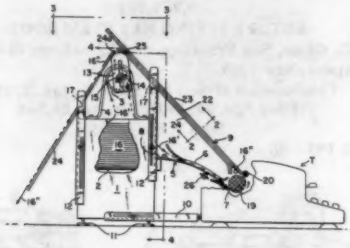
The typewriter includes a cylindrical platen having free ends and held in position by a plurality of rollers disposed at circumferential positions about the platen, with the position of each roller being, with respect to the circumference of the platen, less than 180° from the next roller, and one of the rollers being shiftable away from the platen and retainable in its shifted position, to provide a space between the shifted roller and an adjacent roller greater than the diameter of the platen. The typewriter also includes a paper guide having a planar surface wider than the platen, for guiding a sheet of paper or the like downwardly to the underside of the platen, and an approximately semicircular curl disposed outwardly from each end of the platen.

3,767,024

FANFOLD CARD GUIDE DEVICE WITH GRAVITY HELD DISCHARGE CHUTE

Robert F. Banwarth, Hyattsville, Md., assignor to The United States of America as represented by the Director of the Federal Bureau of Investigation, Washington, D.C.

Filed Oct. 8, 1971, Ser. No. 187,670
Int. Cl. B41j 15/00
U.S. Cl. 197—133 R 6 Claims



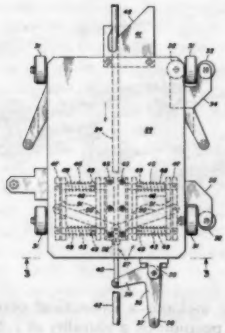
An apparatus and method are disclosed for maintaining an orderly automatic feed of fanfolded continuous - supply index cards and self-contained carbon copies from a respository into a typewriter, propelled by platen rotation of the typewriter. The device also provides a means of orderly and automatic discharge of the typed cards from the typewriter, delivering them to a location clear of the machine for further processing.

3,767,025

INDEPENDENT TRANSFER MEANS FOR CONVEYOR SYSTEMS

Thomas C. Louis, Fort Worth, Tex., assignor to N. L. Industries, Inc., New York, N.Y.

Filed May 18, 1972, Ser. No. 254,435
Int. Cl. B23g 5/22; B61b 7/20
U.S. Cl. 198—19 13 Claims



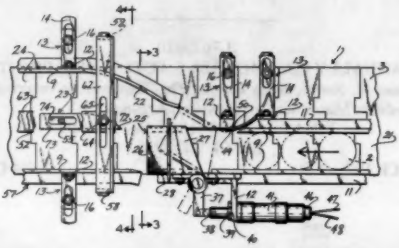
Clutch mechanism comprising spaced parallel jaws adapted to selectively engage and release a moving cable, embodies toggle linkage connected to the clutch jaws in a manner such that the jaws are always maintained parallel to the cable in moving into and from engagement therewith; the clutch mechanism being one element of transfer means especially adapted for, but not limited to, use with conveyor systems of the type designed to move work piece supporting pallets to successive work stations.

3,767,026

BY PASS MECHANISM FOR A CONVEYOR SYSTEM

William G. Pagdin, Milwaukee, and Robert F. Risley, Wauwatosa, both of Wis., assignors to Jos. Schlitz Brewing Company, Milwaukee, Wis.

Filed Oct. 29, 1971, Ser. No. 193,657
Int. Cl. B65g 47/28
U.S. Cl. 198—31 AC 7 Claims



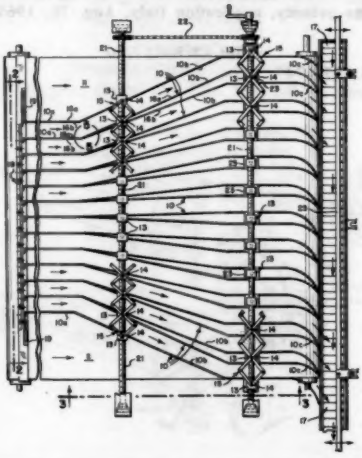
A by-pass mechanism for a conveyor system which enables a series of articles to be diverted from the main conveying path. The conveyor system includes a main conveyor section for conveying a series of cans or other articles and a by-pass conveyor section which is connected to the main conveyor section. An inverted U-shaped gate is pivotally connected to the side of the main conveyor section and is pivotable between a conveying position, in which it is in alignment with the main conveyor section, and a bypass position in which it serves to divert articles through the by-pass conveyor section. The gate is pivoted by a fluid cylinder mounted on the side of the conveyor and by manual actuation of the cylinder, the gate can be pivoted to the bypass condition which enables a series of the articles to be diverted to the bypass conveyor section for purposes of inspection.

3,767,027

ADJUSTABLE GUIDE ASSEMBLY FOR FEEDING BOTTLES AND THE LIKE TO A HORIZONTAL MOVING PLATFORM

Francis X. Pund, and Ralph E. Lippert, both of Cincinnati, Ohio, assignors to The Andrew Jergen Company, Cincinnati, Ohio

Filed July 25, 1972, Ser. No. 274,892
Int. Cl. B65g 47/26
U.S. Cl. 198—32 4 Claims



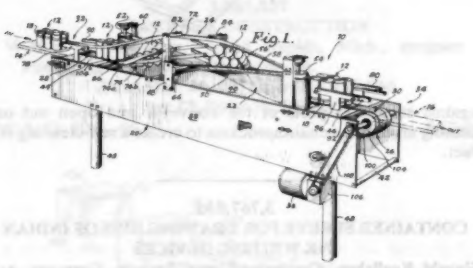
A plurality of vertical dividers is suspended over a moving horizontal platform so as to receive a plurality of rows of

oblong articles such as bottles moving on the platform. The dividers are shaped so as to separate the rows as they are carried by the platform and to thereafter turn the separated rows approximately 45 degrees in a horizontal plane so as to discharge the rows of articles at the latter angle onto a second horizontal platform moving in a direction perpendicular to the direction of movement of the first-mentioned platform.

3,767,028
PACKAGE INVERTER

Victor Del Rosso, Ithaca, N.Y., assignor to Hi-Speed Checkweigher Co., Inc., Ithaca, N.Y.

Filed Nov. 5, 1970, Ser. No. 87,163
Int. Cl. B65g *47/24, 15/14*
U.S. Cl. 198—33 AC **4 Claims**

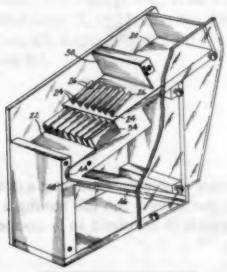


A mechanism for inverting articles during passage thereof along a substantially straight line path of travel including a single endless drive belt twisted through 180° and trained about vertically disposed rollers arranged on opposite sides of the path of travel adjacent inlet and outlet ends of the mechanism, and guide devices arranged to maintain articles in surface engagement with a driving flight of the belt for passage between the ends of the mechanism.

3,767,029
ORIENTATION DEVICE

Thomas G. Owen, Fairfield, Conn., assignor to Remington Arms Company, Bridgeport, Conn.

Filed Aug. 25, 1971, Ser. No. 174,671
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AC **5 Claims**

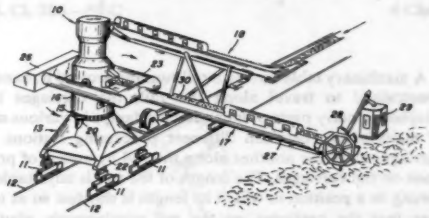


A process and apparatus to orient small, very light articles which are irregularly shaped, e. g. dish-shaped or more specifically having the shape of a truncated cone. The dish-shaped articles are caused to be supported in an upright manner in vertical slots in which the center of gravity of the article will always be displaced from the point of support, i. e. the thin peripheral edge at the bottom of the article, and then the articles are caused to be rolled down the vertical slots out onto a continuous deck whereupon the unsupported articles will all fall on their heavy or top side. The articles then can be transferred directly to the next operation or they can be turned over by conventional inverter means.

3,767,030
STACKER-RECLAIMER MATERIAL HANDLING UNIT

Aubrey C. Briggs, Carnegie, and Roy A. Behling, Jr., Coraopolis, both of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Oct. 12, 1971, Ser. No. 187,999
Int. Cl. B65g *65/16*
U.S. Cl. 198—36 **11 Claims**

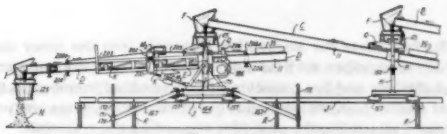


A balanced boom stacker-reclaimer device wherein the balanced boom includes a bifurcated support tower straddling portion which is pivotally connected to the support tower. The boom is preferably of tubular construction and the bifurcated portion is pivotally connected to the support tower. A unitary, generally conical gantry structure provides a rigid, uniform support for the slew bearings which allow for rotation of the boom.

3,767,031
CONVEYOR SYSTEM FOR VISCOUS OR CEMENTITIOUS MATERIAL

Donald J. Gorgei, Poland, Ohio; Daniel I. Weisz, Ellwood City, and Russell B. Cooper, New Castle, both of Pa., assignors to Beaver-Advance Corporation, Ellwood City, Pa.

Division of Ser. No. 858,384, Sept. 16, 1969, Pat. No. 3,656,607. This application Nov. 30, 1971, Ser. No. 203,167
Int. Cl. B65g *37/00, 47/00*
U.S. Cl. 198—92 **19 Claims**



An adaptable, flexible conveyor system is provided which employs material carrying continuous belt pick-up, conveyor-transfer and turret sections. A transfer assembly is pivotally-carried between the forward end of one conveyor section and the tail end of a cooperating conveyor section to which the material is to be delivered, and a scraper assembly is carried by the forward end of the one conveyor section within the transfer assembly for removing adhering material from the belt adjacent a head pulley. A combination scraper means is provided for cleaning an underside of a belt and the exposed side of a drive pulley at the tail end of each conveyor section which has its own individual drive unit that has a swing grate mounting to facilitate adjustment of belt tension and replacement of the belt.

3,767,032

MACHINERY TABLE

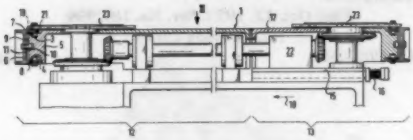
Rudolf Bruckner, Friedrich-Ruckert Str. 60, Coburg, Germany

Filed June 21, 1971, Ser. No. 155,166

Claims priority, application Germany, June 27, 1970, P 20 31 851.8

Int. Cl. B65g *17/00*

U.S. Cl. 198—129 3 Claims



A machinery table having a rail running around it, carriages constrained to travel along the rail, the carriages being adapted to carry parts of incandescant lamps in various stages of manufacture between different processing stations. The carriages abut one another along the rail by means of projections on the carriages. The length of the rail is adjustable and sprung to a position in which its length is shortest so as to ensure that the carriages on the rail continuously abut one another.

3,767,033

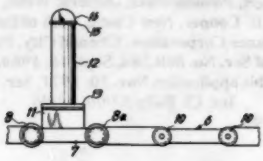
SURFACE PLATE FOR ASSEMBLING MATERIALS FOR SHIP HULL

Ryoichi Yamauchi, and Minoru Odake, both of Ichiharashi, Chiba, Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan

Filed Apr. 6, 1972, Ser. No. 241,593

Int. Cl. B65g *13/00*

U.S. Cl. 198—131 3 Claims



Surface plate for assembling materials into the inner constructive member such as side transverse, bottom transverse and the like and for conveying the assembled member to the next station comprising a plurality of chain conveyers and projections secured to the chain for supporting the materials.

3,767,034

CHAIN-TYPE CONVEYORS

William Thomas Teagle, Blackwater, Truro, Cornwall, England

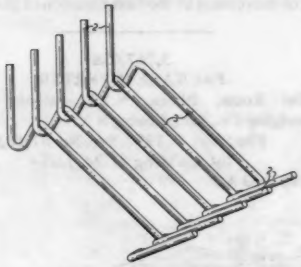
Filed Oct. 1, 1971, Ser. No. 185,772

Claims priority, application Great Britain, Oct. 5, 1970, 47,213/70

Int. Cl. B65g *15/30*

U.S. Cl. 198—196 4 Claims

A conveyor chain capable of use on a conveyor/elevator for agricultural produce is assembled from a plurality of identical transversely extending link members each of which is bent at its ends, first in a horizontal plane to form sockets for the transverse portion of the next link member, and then in a vertical plane to retain the next link member in the sockets and form upstanding side members which combine with the side members on the other links to provide shallow walls which prevent produce carried by the conveyor chain from rubbing against stationary parts of the conveyor and open out on passing around the chain sprockets to create a self-cleaning effect.



3,767,035

CONTAINER SLEEVE FOR DRAWING NIBS OF INDIAN INK WRITING DEVICES

Harald Koelichen, Geretsried/Upper Bavaria, Germany, assignor to Standardgraph Filler & Fiebig GmbH, Geretsried, Germany

Filed Jan. 5, 1972, Ser. No. 215,550

Claims priority, application Germany, Jan. 12, 1971, G 71 00 878.1

Int. Cl. B43k *31/00*

U.S. Cl. 206—1 R 7 Claims

An open container sleeve for receiving a drawing nib, a plug closing the nib in the sleeve; the nib having a plural sided exterior contour, which is received in a cooperatively shaped recess in the plug.

3,767,036

LIGHTWEIGHT CONTAINER MEANS

Winford Newton McLeod, 116 15th Pl., Manhattan Beach, Calif.

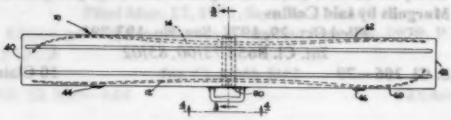
Filed Oct. 12, 1971, Ser. No. 188,353

Int. Cl. B65d *85/54*

U.S. Cl. 206—16 R 8 Claims

A rigid elongate container for shipping and transporting equipment of such expensive and specialized nature as skis,

together with articles and apparel typically associated with skiing, including ski boots, goggles, gloves, heavy jacket, and



the like. Maximum efficiency in use of space and in strength-to-weight ratio are achieved by using the contained skis as part of the rigidizing system for the container.

3,767,037

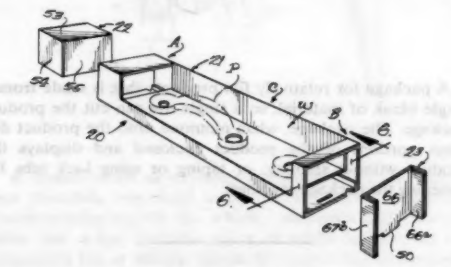
PACKAGE CONSTRUCTION

Wilbur G. Anderson, Grand Rapids, Mich., assignor to Packaging Corporation, Evanston, Ill.

Filed Mar. 25, 1971, Ser. No. 127,966

Int. Cl. B65d *79/00, 13/06*

U.S. Cl. 206—45.19 **5 Claims**



A package construction is provided wherein a product is mounted on a sleeve member whereby a substantial portion of the product is observable without requiring removal of the product from the sleeve member. The portion of the sleeve member in contact with and supporting the product is recessed so as to provide protection for the accommodated product.

3,767,038

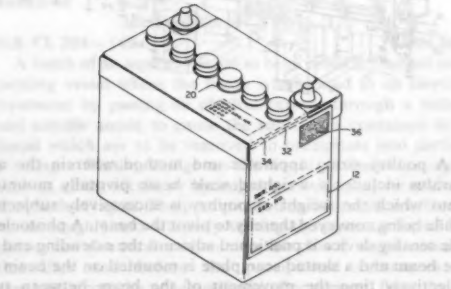
COMPOSITE LABEL AND BATTERY PACKAGE

Harry M. Channing, 1508 Rose Virginia Rd., Wyomissing, and Bernard J. Elzer, 378 Sunset Rd., West Reading, both of Pa.

Filed Sept. 7, 1972, Ser. No. 286,989

Int. Cl. B65d *67/00, 75/54, 85/00*

U.S. Cl. 206—46 BA **8 Claims**



A battery is provided with a label made of corrosion resistant material several portions of which are severable. The portions have indicia thereon relating one portion to another portion and to the battery. One of the portions is in the form of a postcard and has a portion of its surface specially adapted to provide a suitable surface for attaching a stamp for mailing.

3,767,039

SECTIONALLY SUBDIVIDED BILATERAL STICKER TAPE ROLL

Carl Schroter, Rommelhausen, Stuttgart-Uhlbach, Germany, assignor to Heinrich Hermann, Stuttgart-Wangen, Germany

Filed Dec. 16, 1971, Ser. No. 208,676

Claims priority, application Germany, Apr. 7, 1971, P 21 16 989.1

Int. Cl. B65d *83/00, 85/67*

U.S. Cl. 206—59 C **4 Claims**

A supply tape roll for stickers coated on both sides with pressure sensitive adhesive is composed of a carrier tape, coated on both sides with a repellent or inhibitor for adhesive, and a sticker tape coated on both sides with a pressure sensitive adhesive and subdivided into sticker segments by a pattern of transverse linear cuts forming one or more narrow connecting strips between sticker segments, which allow a sticker to be pulled away from the succeeding sticker for a distance before it is torn off. The sticker tape and carrier tape are rolled up together to form a supply roll particularly adapted for use in dispensing devices.

3,767,040

PRESSURE-SENSITIVE POLYURETHANE ADHESIVES

Leonard A. Tushaus, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 119,838, March 1, 1971, Pat. No. 3,718,712. This application Nov. 20, 1972, Ser. No. 307,873

Int. Cl. B65d *85/67*

U.S. Cl. 206—59 C **4 Claims**

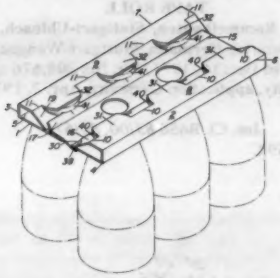
Pressure-sensitive polyurethane adhesives having the combined properties of high peel adhesion, quick stick, shear strength, and resistance to hydrocarbon solvents comprise the crosslinked polyurethane reaction product of the in situ reaction of polyhydroxyl terminated polyethers and polyethers with polyisocyanates to provide a product having a molecular weight between crosslinks of about 6,000 to about 40,000 and a urethane group concentration of about 0.7 to 1.3 per 1,000 gms of polymer, and trackifier comprising the reaction product of cyclic terpene alcohols and aromatic isocyanates. The adhesive is coated as a layer on a backing of paper or polymeric film and wound in a roll. A silicone treated release liner may be adhered to the adhesive layer. The adhesive may also be coated as a transfer film on a release liner.

3,767,041

MULTIPLE-ARTICLE CARRIER OF THE CROWN-SUPPORT TYPE

Earl J. Graser, Monroe, La., assignor to Olinkraft, Inc., West Monroe, La.

Filed May 22, 1969, Ser. No. 826,850
Int. Cl. B65d 71/00; B66f 19/00
U.S. Cl. 206—65 E 3 Claims



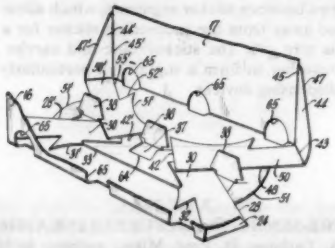
A multiple-article carrier, and blank therefor, of the crown-support type comprising a bottom panel having means for securing said bottom panel to the carried articles, side wall panels and overlapping top panels. In a preferred form, the carrier also comprises crown-cover panels, locking panels and at least one of the top panels is designed such that it may be interlocked with the bottom panel and with one or more of the articles.

3,767,042

BOTTLE CARRIER WITH GUSSETED ENDS

Robert H. Ganz, Saddle River, N.J., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Nov. 30, 1971, Ser. No. 203,156
Int. Cl. B65d 71/00, 85/62
U.S. Cl. 206—65 E 7 Claims



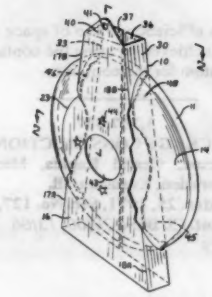
A wraparound sleeve-type carton or carrier for bottled goods which is formed of a single blank and wrapped around a cluster of bottles arranged in double row formation, with the bottle tops engaged in apertures in a middle panel of the blank and the blank having end panels which are provided with locking tab formations engaged in cooperating apertures in overlapped panel margins when the blank is folded to bring the end panels into bottom wall formation beneath the cluster of bottles. Relatively small triangular panels for partially closing opposite axial ends of the carton are hinged to the end edges of the side walls, which end panels have integral tabs hinged to bottom edges and connected to the bottom wall forming panels by foldable triangular webs so that the bottom tabs may be folded so as to lie on the top faces of the bottom wall members where they are trapped beneath the end bottles in the carton thereby precluding inadvertent unfolding of the end panels which hold the lower portions of the end bottles against movement out of the ends of the cartons.

3,767,043

PACKAGE FOR PRODUCTS

Morris Margolis, P.O. Box 1206, Minneapolis, Minn., and Harry F. Collins, Jr., Minneapolis, Minn., assignors to Said Margolis by said Collins

Filed Oct. 29, 1971, Ser. No. 193,792
Int. Cl. B65d 73/00, 85/02
U.S. Cl. 206—79 10 Claims



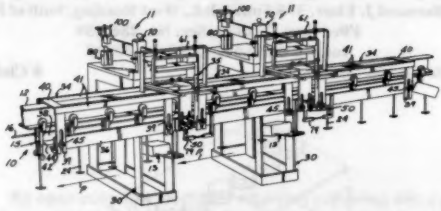
A package for relatively flat products that is made from a single blank of material, so a single die can cut the product package. The package, when mounted onto the product displays portions of the product enclosed and displays the product without stapling, or taping or using lock tabs for fastening the package together.

3,767,044

PHOTOELECTRIC SIZING APPARATUS AND METHOD

Grover S. Harben, Jr., Gainesville; Ernest E. Lewis, Flowery Branch; Lloyd E. Sloan, Gainesville, all of Ga., and William J. Lawson, Milton, Del., assignors to Gainesville Machine Company, Inc., Gainesville, Ga.

Filed May 10, 1971, Ser. No. 141,471
Int. Cl. B07b 13/08
U.S. Cl. 209—121 10 Claims



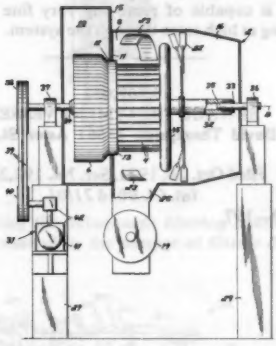
A poultry sizing apparatus and method wherein the apparatus includes a weighted scale beam pivotally mounted onto which the weight of poultry is successively subjected while being conveyed thereby to pivot the beam. A photoelectric sensing device is positioned adjacent the extending end of the beam and a slotted scan plate is mounted on the beam to selectively time the movement of the beam between two predetermined points. If the time required for the beam to travel between the points is greater than a preselected amount, the photoelectric sensing device causes an ejector mechanism to eject the poultry from the conveying means.

3,767,045

CLOSED CIRCUIT MULTI-STAGE AIR CLASSIFIER

Peter Voelskow, Bad Kreuznach, Germany, assignor to G. Siempelkemp & Co., Krefeld, Germany

Filed Mar. 17, 1971, Ser. No. 125,140
Claims priority, application Germany, Mar. 18, 1970, P 20 12 797.3
Int. Cl. B04b *5/12*
U.S. Cl. 209—144 12 Claims



A closed-circuit air classifier for comminuted and particulate materials, especially wood fibers, sawdust, pulverized-wood particles and the like, which comprises a coarse air classifier and a fine classifier, each of which is provided with respective fan or whizzer blades for suspending or entraining the particles with respective air streams. The inlet of the coarse air classifier is connected to the outlet of the fine air classifier and is provided with a pneumatic gate through which the material to be classified is introduced into the system. The outlet of the coarse classifier is connected to the inlet of the fine classifier.

3,767,046

LIQUID PURIFICATION METHOD

Karl Heinz Hartkorn, Hamburger Strasse 17, Russelsheim, Germany

Filed Dec. 6, 1971, Ser. No. 205,171
Claims priority, application Austria, Dec. 7, 1970, A 10983/70
Int. Cl. C02c *5/12*; B01k *1/20*
U.S. Cl. 204—149 24 Claims

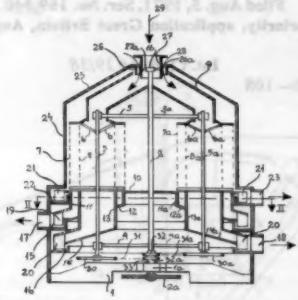
A batch of an aqueous liquid to be purified is charged into a treating vessel where the batch is subjected to an electrical treatment by passing an electric current through a cathode and soluble anode to cause the substances contained in the liquid which are to be removed to precipitate into particles forming a floating sludge on the liquid. If desired, reagents such as acids, alkalis or hydrogen peroxide may be added to the batch of liquid. The precipitation or flocculation is favored by thoroughly and intensely stirring the aqueous liquid bath during the electrical treatment in the closed vessel as well as thereafter and before the precipitated substances are separated from the aqueous liquid after removal from the vessel, as well as by retaining a residual portion of the treated liquid in the vessel as an addition for the subsequent batch to be treated therein. It is preferred to use a direct current obtained from a polyphase rectification.

3,767,047

APPARATUS FOR SCREENING SEED AND THE LIKE MATERIALS

Svend Jorgen Rasmussen, Millinge, Denmark, assignor to Damas Jens Nielsens Maskinfabrik A/S, Vester Aaby, Denmark

Filed Oct. 12, 1971, Ser. No. 188,180
Claims priority, application Denmark, Oct. 12, 1970, 5158
Int. Cl. B07b *1/26*
U.S. Cl. 209—240 1 Claim



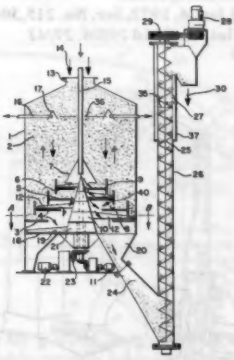
Seed screening apparatus having two vertically arranged screening drums suspended from vertical shafts which are supported by means of a main shaft, said main shaft being provided with driving means for rotating the main shaft and accordingly apply a planetary motion to the drum shafts during which planetary movement the drums rotate about their shafts, means being provided for creating a pressure outside the drums which is lower than the pressure prevailing inside the drums.

3,767,048

METHOD AND APPARATUS FOR FILTERING LIQUID

Heinz Prengemann, Michelbach, Germany, assignor to Passavant-Werke, Michelbacher Hutte, Germany

Filed Aug. 20, 1971, Ser. No. 173,466
Claims priority, application Germany, Aug. 26, 1970, P 20 42 353.4
Int. Cl. B01d *33/00*, *33/30*
U.S. Cl. 210—77 22 Claims



A method and apparatus for filtering liquids in which the liquid to be filtered is passed upwardly through a downwardly moving filter bed of granular filter material. The effective cross-section of the filter bed bottom is increased by forming

up into this bottom a cavity into which the liquid is introduced for passage through the bed, and through which the lowermost granular filter material of the bed is removed. The cavity may be formed structurally with fixed, annular, conically arranged supports between which the granular filter material and the liquid pass downwardly and upwardly, respectively.

3,767,049

LIQUID CLEANSING MEANS

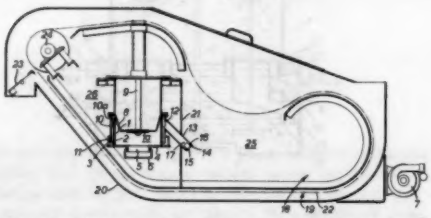
Ronald Frederick Worlidge, High Ridge, 9 Durlston Rd., Parkstone, Poole, Dorset, England

Filed Aug. 5, 1971, Ser. No. 169,340

Claims priority, application Great Britain, Aug. 11, 1970, 38,625/70

Int. Cl. B01d *29/38*

U.S. Cl. 210—108 **11 Claims**



The invention comprehends a liquid cleansing apparatus comprising a filtration unit; said filtration unit comprising a filter means, a fluid flow path for liquid to be filtered through said filter means from a dirty to a clean side thereof, a liquid displacement means operable to backflush a specified volume of filtered liquid through said filter means from said clean to said dirty side thereof thereby to dislodge solid contaminant, filtered from said liquid, from said dirty side of said filter means, a contaminant receiving chamber defined adjacent said dirty side of said filter means and of a volume smaller than the specified volume of filtered liquid which said liquid displacement means is capable of backflushing, and valve means for discharging from said contaminant receiving chamber liquid backflushed by said liquid displacement means therein-to together with contaminant dislodged from said dirty side of said filter means by said backflushed liquid.

3,767,050

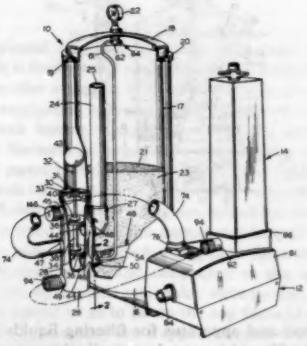
FILTRATION SYSTEM FOR LIQUIDS

Norbert L. Reiner, Wallingford, Conn., assignor to Coleco Industries, Inc., Hartford, Conn.

Filed Jan. 4, 1972, Ser. No. 215,304

Int. Cl. B01d *29/08, 29/42*

U.S. Cl. 210—169 **10 Claims**



A filtration system for liquids employs a sealed tank that is partially filled with sand or the like to provide a filtration bed in the lower portion thereof. An underdrain device is buried in the bed of sand and prevents particles from passing outwardly from the bed with the liquid flowing through the system. One end of a vent conduit is attached to the underdrain device from which it passses upwardly through the sand to a point near the top of the tank. Air introduced into the tank escapes automatically through the vent conduit, thus eliminating the need for the valves which are conventionally provided in the upper portion of such tank filters for the same purpose. The filtration system includes a particulate or sand filter unit coupled with a fabric type filter to remove very fine particles from the liquid removed from the liquid treated in the sand filter unit. The system is particularly adapted for use with swimming pools, and is capable of removing very fine particles from water flowing at high rates through the system.

3,767,051

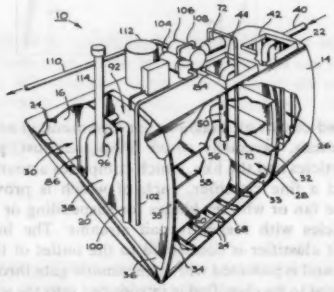
SEWAGE TREATMENT VESSEL

Alexander David Thompson, 15561 Aster St., Westminster, Calif.

Filed Oct. 26, 1971, Ser. No. 192,208

Int. Cl. B01d *21/01*

U.S. Cl. 210—197 **9 Claims**



A sewage treatment vessel for primary, secondary and tertiary treatment of sewage having a primary settling chamber, an aeration chamber having staggered transversely extending baffles therein for improved aeration, a clarifying chamber receiving effluent from the aeration chamber, and chlorinating means for removing the effluent from the clarifying chamber, the clarifying chamber having a tapered wall portion and an opening at the lowermost portion thereof communicating with the aeration chamber to provide further aeration of the effluent therein. The vessel is constructed of fiberglass and the inner wall portions of the vessel are arcuate and provided with ribs for strengthening thereof and to assist in the aeration process.

3,767,052

APPARATUS FOR SUPPORTING FILTER MEDIUM FOR FILTER PRESS

Katsutami Shibasaki, Osaka, Japan, assignor to Kurita Machinery Manufacturing Company Limited, Osaka, Japan

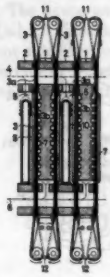
Filed Mar. 30, 1972, Ser. No. 239,491

Int. Cl. B01d *33/00*

U.S. Cl. 210—225 **9 Claims**

A filter medium is disposed along the filtering face of each filter plate in the form of a double sheet and extends upwardly and downwardly of the filter plate in endless fashion. After completion of a filtering operation, the portion of the endless filter medium facing the prefilt is replaced with the other portion opposite to the prefilt side for passing the filtrate so that

the portion of the medium facing the prefilt on which cake has been deposited during filtration serves as a portion for passing



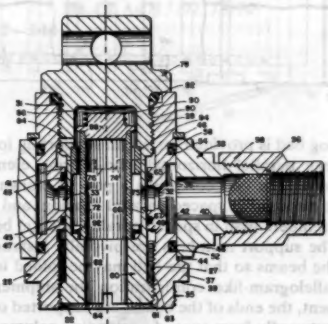
the filtrate during the subsequent filtering operation and is spontaneously washed by the passage of filtrate during filtration.

3,767,053

SWIVEL FILTER

Lowell R. Bavin, West Unity, Ohio, assignor to The Aro Corporation, Bryan, Ohio

Filed Aug. 18, 1971, Ser. No. 172,641
Int. Cl. B01d *27/08*
U.S. Cl. 210—232 **10 Claims**



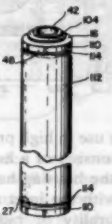
An improved filter construction for a pneumatically operated device includes a cylindrical body with a central bore and an inlet passage to the bore. The inlet passage is transverse to the longitudinal axis of the central bore. Within the central bore is a threadably positioned hollow casing and a cap. A filter element is positioned by the casing and cap in a fluid flow path through the hollow casing. The cap and casing are keyed together and are also adapted to rotate together into a first fluid flow and filter position or into a second fluid disconnect and filter element replacement position. When located in the second position, the casing blocks the fluid path and the cap is removable. Upon removal of the cap, the filter may be removed and replaced.

3,767,054

A FILTER TUBE CONTAINING A SELF-SEALING FILTER TUBE

Roger M. Farrow, Coxheath; Anthony B. Kimber, Iwade; John Barrington Cole, Pease Pottage; John Walter Miles, East Grinstead, and Graham Ernest Griffiths, Horsham, all of England, assignors to W. R. Balston (Industrial) Limited, Maidstone, Kent, England

Division of Ser. No. 46,343, June 15, 1970, Pat. No. 3,698,562.
This application Dec. 29, 1971, Ser. No. 213,833
Int. Cl. B01d *27/04*
U.S. Cl. 210—232 **15 Claims**



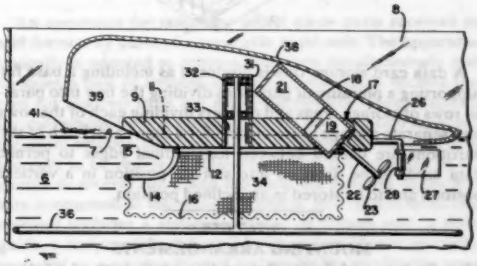
A porous support core is prepared from a synthetic polymeric material, which support core is adapted for use with disposable semirigid filter tubes, which core comprises a plurality of individual elements arranged in a stacked interlocking relationship, the elements so structured to form an axial passageway in the stacke elements and flow passages in the wall of the core so formed. The individual disc elements are characterized by a central aperture to form an axial passageway, projecting partitions on one surface to form the flow passage and hook elements on the opposite surface to interlock individual disc elements.

3,767,055

SKIMMER FOR A WATER BODY

Lloyd P. Flatland, P.O. Box 371, Corte Madera, Calif.

Filed Oct. 14, 1971, Ser. No. 189,271
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 **3 Claims**

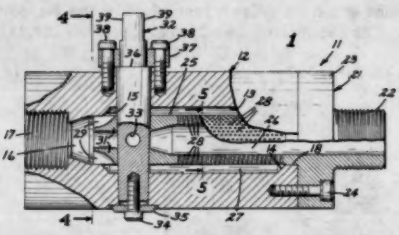


A skimmer for a water body includes a float carrying a detachable trash receptacle having a forwardly directed opening. There is a propeller on the float offset from the float center for propelling the float and a settable rudder for guiding the float. A rotatable guard ring extends outwardly beyond the float to fend the float from obstacles and permit the float to turn away automatically. A decorative housing encloses much of the structure.

3,767,056
INJECTION MOLDING FILTER

Gordon E. Neuman, Coon Rapids, Minn., assignor to A-1 Engineering, Inc., Anoka, Minn.

Filed Aug. 6, 1971, Ser. No. 169,774
Int. Cl. B01d 29/20
U.S. Cl. 210—409 15 Claims

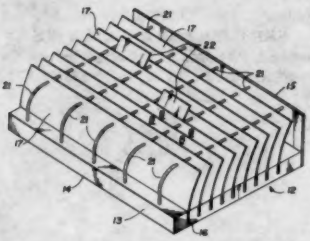


A filtering device for use in high pressure injection molding apparatus. The filter consists of a housing having a material flow inlet and outlet, the housing having a longitudinal bore which communicates with the inlet and outlet. A cylindrical member having a plurality of radially disposed filtration openings is positioned in the longitudinal bore to define first and second concentrically disposed flow passages. A valve member comprising a tapered pin with a transverse bore registrable with the first passage is rotatable to either block the first passage and thereby effect filtering flow through the radially disposed holes and second passage, or to permit a purge flow through the essentially unrestricted first passage.

3,767,057
DATA CARD STORAGE TRAY

Lloyd W. Holmes, 800 Leopard, P.O. Box 1631, Corpus Christi, Tex.

Filed Sept. 13, 1971, Ser. No. 179,986
Int. Cl. B42f 17/12, 7/10; A42b 63/00
U.S. Cl. 211—10 4 Claims



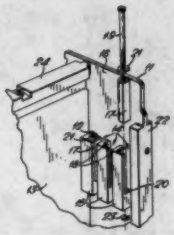
A data card storage tray is disclosed as including a base for supporting a plurality of partitions dividing the tray into parallel rows of storage areas and dividers dividing each of the rows into separate storage areas or slots for a data card. Each of the partitions are curved between longitudinal edges to permit data cards to be dropped into storage position in a vertical position and to be stored in an inclined position.

3,767,058
MOUNTING ARRANGEMENTS

Alan Barlow, and James Robert Campbell, both of Cheltenham, England, assignors to Smiths Industries Limited, Cricklewood, London, England

Filed Mar. 24, 1972, Ser. No. 237,716
Claims priority, application Great Britain, Mar. 26, 1971, 78,671/71
Int. Cl. A47g 19/08
U.S. Cl. 211—41 10 Claims

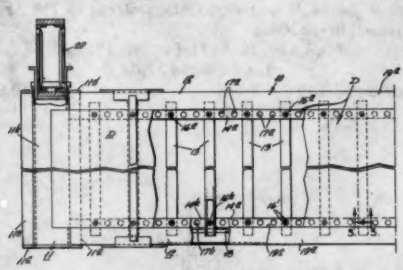
Mounting of printed-circuit boards in a compartment of a casing is made using an arrangement in which the boards are retained in guideways of two opposed compartment-walls. The guideways are defined between projecting metal blocks that are integral with the walls, and rubber bushes which extend lengthwise of the guideways and which are retained on screws in elongate recesses of the blocks, are compressed lengthwise of the guideway by tightening of the screws. The rubber bushes as so squeezed project from the recesses into the guideways and clamp the boards therein. The rubber bushes may be replaced by metal wedges that bear upon inclined shoulders of other wedge parts in this case carried by the blocks, and under compression exerted by the screws longitudinally of the guideways are similarly squeezed out into the guideways.



3,767,059
FOLDING BED FOR A STORAGE RACK

Edward A. Seiz, 136 E. Third St., Lansdale, Pa.

Filed Apr. 27, 1972, Ser. No. 248,085
Int. Cl. A47f 5/10
U.S. Cl. 211—149 16 Claims



A folding bed is provided for use in supporting load materials between parallel horizontal load-bearing elements in a storage rack. The bed comprises a pair of elongated beams which are disposed in spaced parallel relation, and a series of support members span in spaced parallel relation between the beams. The support members are pivotally fastened at their ends to the beams so that the bed may be folded into a compact parallelogram-like configuration for shipment. In one embodiment, the ends of the beams are supported on arms extending outwardly from spaced upstanding columns in a cantilever rack; in another embodiment, the beams are supported along their lengths by underlying load-bearing elements. An upstanding divider which is capable of being releasably mounted onto the load beams by means of clips is also provided.

3,767,060
BUCKET ASSEMBLY FOR USE IN A MATERIAL HANDLING APPARATUS

Aubrey C. Briggs, Carnegie, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed May 18, 1972, Ser. No. 254,399
Int. Cl. A47g 29/00
U.S. Cl. 212—81 16 Claims

A reeved bucket assembly for use in a material handling apparatus is disclosed. The assembly includes a clamshell-type

bucket to which is secured hold cables fixed to diagonally opposite end portions of the top region of the bucket. The hold cables are reeved over sheaves supported by an elongated mounting arm secured at an acute angle to the underside of a main trolley. The trolley is provided with mounting means for arranging it on a boom member or the like for longitudinal movement therealong. The acute angle of the mounting arm, the longitudinal axis of which extends laterally of the trolley, is measured from the front side thereof which faces the trolley, the rear side of the arm facing the bucket. Support means are provided for supporting the mounting arm to the trolley for

selective rotation about the transverse axis thereof. The hold sheaves are supported by frames which are rotatable with respect to the mounting arm about axes extending laterally, with respect to the arm. The mounting arm, the means for rotatably supporting the arm on the trolley, and the sheave carrying frames are constructed and arranged such that when the mounting arm is rotated the bucket will rotate without tilting while the hold sheaves remain in fixed planes with respect to the bucket. Close sheaves supported by the mounting arm and close cables reeved over the sheaves and connected directly to the bucket are also provided.

3,767,061

TOWER CRANE WITH LOAD LIMITING APPARATUS

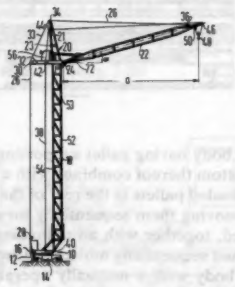
Hans Tax, Potsdamer Strasse 3; Rudiger Franke, and Klaus Hosler, all of Munich, Germany, assignors to said Tax, by said Franke & said Hosler

Filed Jan. 25, 1972, Ser. No. 220,609

Claims priority, application Germany, Feb. 2, 1971, P 21 04 800.0

Int. Cl. A47f 5/02, 13/00

U.S. Cl. 212—144 **8 Claims**



The load limiting apparatus of a tower crane, which inactivates the load lifting winch when a predetermined load is exceeded, is controlled in such a manner that the maximum permissible load L_{max} varies with the angle α between the boom and the horizontal, and the corresponding horizontal spacing a between the projections of the boom pivot and of the depending load carrying cable in a manner to satisfy the equation $L_{max} = L_{omax} - k_1 a$ wherein L_{omax} is the value of L_{max} when a is at a minimum, and k_1 is a proportionality factor and constant for all practical purposes. Under these conditions, the maximum tensile stress developed in the boom is constant, at least for an optimum boom length, while a varies between a_{min} and a_{max}, and the structural strength of the material can be fully utilized under all conditions.

3,767,062

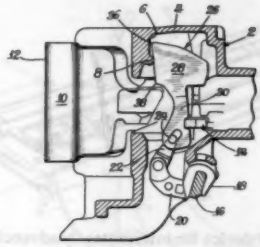
COUPLING DEVICE

Ralph William Holibaugh, Park Forest, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Jan. 14, 1972, Ser. No. 217,736

Int. Cl. B61g 3/08

U.S. Cl. 213—127 **1 Claim**



A railway coupling device incorporating a head having an upper corner and a front wall having a rearwardly extending lug, and a lock having an upper corner and a substantially flat front surface. The front surface is slidably engagable with the lug during initial movement of the lock and the upper corner of the lock is engagable with the upper corner of the head for subsequent pivotal movement.

3,767,063

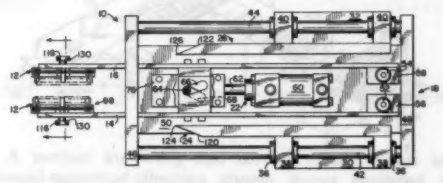
APPARATUS FOR REMOVING PARTS FROM MOLDING CAVITIES

Robert McKinven, Jr., Detroit, Mich., assignor to Chicago Rawhide Manufacturing Co., Chicago, Ill.

Filed June 23, 1971, Ser. No. 155,844

Int. Cl. B66c 1/62

U.S. Cl. 214—1 BB **4 Claims**



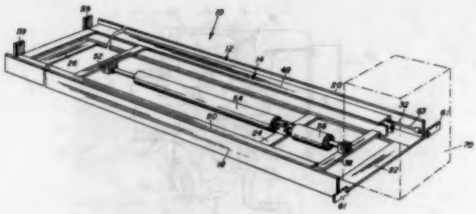
An apparatus for removing plural piece parts received in and formed by parts of a separable mold unit. The apparatus typically is adapted to remove two parts simultaneously and includes a pair of fixtures adapted to removably receive the part for removal from the mold, the fixtures being mounted for movement from a remote position to a position adjacent the mold interior and thence into a position of registry with the part to be removed, following which the sequence is repeated in reverse order and the parts are released as the fixture is returned to the remote position. In a typical form, the element includes a stationary frame or chassis unit, a slide guide, a reciprocable slide unit having a pair of arms pivotally mounted on a portion thereof and means for moving the arms about their pivot points, causing movement of the fixture generally perpendicular to the axis of the slide movement. Preferably the fixtures are mounted on the ends of the arms and the fixtures may be removed and replaced with other fixtures for removal of different sizes and shapes of piece parts. A typical fixture includes plural latches urged into a closed position for holding the part to be removed and for preventing movement thereof in any direction, and further includes release means actuable by a portion of the chassis for releasing the part for removal from the fixture.

3,767,064

TRAVELING WALKING BEAM CONVEYOR

David Edward Lutz, 330 Washington Ln., Carlisle, Pa.

Filed June 20, 1972, Ser. No. 264,511
Int. Cl. B25j 3/00
U.S. Cl. 214—1 R 6 Claims



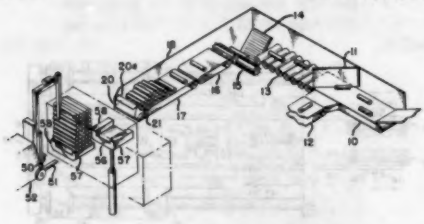
A load transfer device for intermittently advancing a load in a straight path automatically. Means are provided for moving a load relative to the load transfer device and then for moving the entire load transfer device such that the distance the load is advanced is not limited by the length of the load transfer device.

3,767,065

HANDLING OF PULP WOOD BY FORK LIFT TRUCK

Richard W. Hall, Aberdeen, and James W. Young, Montesano, both of Wash., assignors to Enterprises International, Inc., Hoquiam, Wash.

Filed Dec. 2, 1971, Ser. No. 204,088
Int. Cl. B65g 57/02
U.S. Cl. 214—6 H 5 Claims



A charge of logs for storage or transfer to a wood grinder is moved from an open top hopper of a loading rack by forklift vehicle while the adjacent hopper of the loading rack is being filled with logs by a conveyor positioned above the loading rack. The loading rack incorporating the open top hoppers is horizontally shiftable so that when one of the hoppers is filled with a charge of logs, the rack is shifted to position an empty hopper beneath the conveyor to receive a subsequent charge of logs. During loading of a charge of logs in the empty hopper a forklift vehicle unloads the log charge from the filled hopper and transfers the charge to a charging rack above a magazine of a wood grinder or to a storage rack.

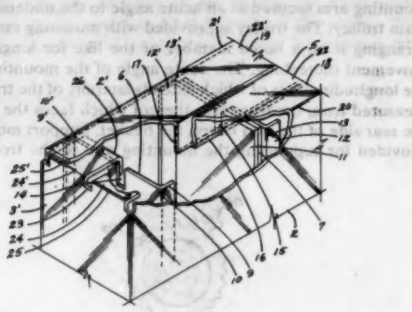
3,767,066

PORTABLE FREIGHT SPACER

Vincent F. Martin; Richard J. Woolverton, and Rodger H. Kuhlmann, all of St. Louis County, Mo., assignors to M.K.W. Industries, Incorporated, St. Louis, Mo.

Filed Dec. 8, 1971, Ser. No. 205,898
Int. Cl. B65g 1/14
U.S. Cl. 214—10.5 R 8 Claims

A portable spacer for disposition between freight units within a compartment to prevent shifting of such units during transit, comprising a substantially hollow block having internal supports for rigidifying same in operative position. Said block is fabricated of lightweight material and adapted for collapsing when in disuse; and being devoid of any means for attaching same to the freight containing structure.

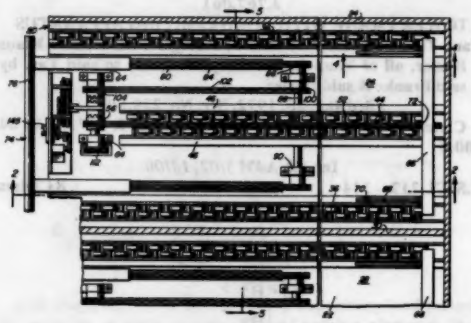


3,767,067

TRUCK BODY WITH BOTTOM CONVEYOR ASSEMBLY

Carl F. Mickey, and Lawrence E. Mickey, both of High Point, N.C., assignors to W. F. Mickey Body Company, Inc., High Point, N.C.

Filed Dec. 14, 1971, Ser. No. 207,769
Int. Cl. B60p 1/36
U.S. Cl. 214—83.22 9 Claims



A truck body having pallet supporting rollers incorporated into the bottom thereof combined with a loading apparatus for receiving loaded pallets in the rear of the truck body and automatically moving them sequentially forward until the body is fully loaded, together with an unloading apparatus for automatically and sequentially moving loaded pallets to the rear of the truck body with a manually operated mechanism being provided for shifting the mechanism from a loading mode to an unloading mode.

3,767,068

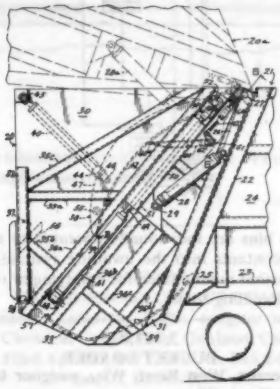
PACKER BLADE FOR A REAR LOADER REFUSE VEHICLE

William A. Herpich; Donal Warren Chaney, both of Galion, Ohio, and George William Palmer, Durant, Okla., assignors to Peabody Galion Corporation, Galion, Ohio

Continuation-in-part of Ser. No. 165,517, July 23, 1971. This application Feb. 24, 1972, Ser. No. 228,949
Int. Cl. B65f 3/00
U.S. Cl. 214—83.3 3 Claims

A packer blade for a rear loader refuse truck having parallel vertical side walls, an open rear end, and a hopper bottom ad-

jacent the rear end. The hopper bottom has a generally V-shaped longitudinal section, with both segments being arcuately formed in longitudinal section. There are a pair of parallel, straight, downwardly and rearwardly inclined guide tracks, respectively located in the upper part of each side wall. A packer blade having a concave arcuate forward surface is pivoted at its upper end on a cross rod carried by slides which are movable along the guide tracks by power means. A pair of extensible cylinders are pivotally connected at the upper rear corners of the side walls and to a medial portion of the packer



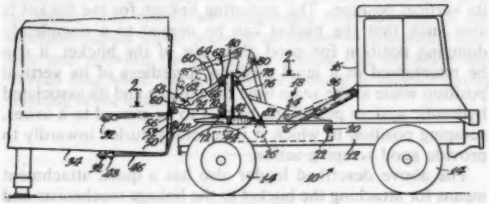
blade. The packer blade is cycled by retracting the rear cylinders, moving the slides down the guides, extending the rear cylinders and then moving the slides up the guides, to pass backwardly over refuse in the hopper, to come down behind the refuse and to sweep it forwardly along the arcuately formed hopper bottom segments and into the truck body. A fall back shield is pivotally mounted between the side walls forwardly of the extreme forward position of the packer blade and cooperates with the top portions of the packer blade to wipe refuse forwardly off such top portions.

3,767,069

TRAILER LIFTING DEVICE

James C. White, Jr., and Lloyd A. Molby, both of Longview, Tex., assignors to Capacity Inc., Downers Grove, Ill.

Filed Jan. 12, 1972, Ser. No. 217,333
Int. Cl. B60p *3/00*
U.S. Cl. 214—86 A 3 Claims



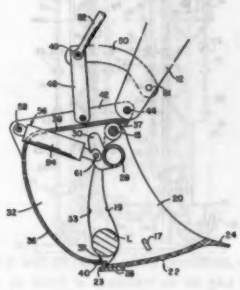
A trailer lifting device for use with spotting tractors having motor driven, vertically adjustable fifth wheels for changing the orientation of the fifth wheel on the spotting tractor. The lifting device includes an upright member terminating in a base provided with a connection element for receipt in the fifth wheel of the spotting tractor with which it is used. A flexible attaching element is connected to the upright and is provided with a connector for securing the attaching element to a trailer whereby the one end of the trailer may be raised to changing the vertical position of the fifth wheel on the spotting tractor.

3,767,070

LIFTING AND EXCAVATING APPARATUS

Carroll H. Arnold, Westminster, Mass., assignor to Wain-Roy, Hubbardston, Mass.

Filed Apr. 13, 1971, Ser. No. 133,501
Int. Cl. E02f *3/81*
U.S. Cl. 214—146 R 18 Claims



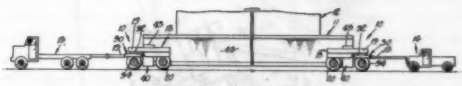
A backhoe bucket of the type including two sections attached for relative pivotal movement and a hydraulic actuator for pivoting the sections relative to each other, the actuator being connected to the sections below the axis of pivotal movement and the bottoms of the two sections overlapping when the sections are in their relatively closed position.

3,767,071

METHOD FOR MOVING MASSIVE LOADS

Henry C. Harbers, Pasadena, Calif., assignor to Western Unit Corporation, Los Angeles, Calif.

Division of Ser. No. 04,928, Jan. 22, 1970, abandoned. This application June 17, 1971, Ser. No. 154,226
Int. Cl. B69p *3/40*
U.S. Cl. 214—152 10 Claims



A method for lifting and moving massive loads using ground-supported-clinching chassis means equipped with pressurized air to perform the lifting and lowering operations at the opposite ends of the moving operation and to cushion the load and protect the same against harmful torsional strains. The apparatus chassis utilizes separate chassis sections hingedly connected together crosswise of the path of travel and provided with jaws for gripping the load from its opposite sides and activated by the inflation of the chassis air spring. The load clinching vehicle can be used to move various loads including massive reinforced concrete girders or the like either alone or while used to support lading, as a building, machinery, etc. Similar chassis units are located at either end of each girder to be moved and equipped with steerable fifth wheel dolly units.

3,767,072

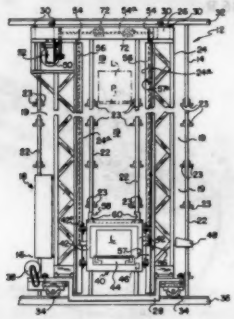
WAREHOUSING SYSTEM WITH LATCH MECHANISM FOR ELEVATOR

Wayne G. Atwater, Willoughby, Ohio, assignor to The Triax Company, Cleveland, Ohio

Filed May 3, 1972, Ser. No. 249,946
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 A 14 Claims

An automatic warehousing system including a mechanized load carrier having a vertically movable elevator portion and

embodying latch mechanism adapted to automatically hold the elevator portion adjacent the upper section of the load carrier and prevent it from moving downwardly toward ground level, in the event that the elevator portion inadvertently moves upwardly beyond the normal safe travel limits. A



cushioning device is also provided for cushioning impact of the elevator with the upper section of the load carrier structure so as to aid in preventing material distortion and destruction of the component parts of the load carrier, in the event of the aforementioned inadvertent movement of the elevator portion beyond its normal upper limit of travel.

3,767,073

APPARATUS FOR EMPTYING A CRATE FILLED WITH FRUIT

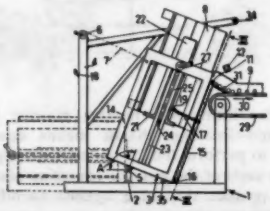
Jan Antoon DeGreef, Tricht, Netherlands, assignor to DeGreef's Wagen-Carrosserie-en Machineboua N.V., Tricht, Netherlands

Filed Apr. 13, 1971, Ser. No. 133,679

Claims priority, application Netherlands, Apr. 16, 1970, 7005460

Int. Cl. B65g *65/00*

U.S. Cl. 214—307 **2 Claims**



For emptying a bulk-fruit crate without damaging the fruit the crate is placed on edge and the fruit is retained in the crate by a cover held on the crate while the latter is being tipped. For preventing damage of the fruit the flow of fruit from the top of the crate during the emptying thereof is controlled successively liberating the outlet opening of the crate from its top edge.

3,767,074

TRASH REMOVAL SYSTEM

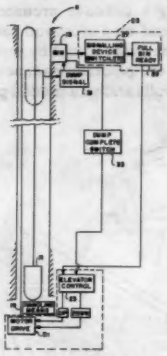
Kyle Sandeler, Houston, Tex., assignor to Brown & Root, Houston, Tex.

Filed Mar. 10, 1972, Ser. No. 233,486

Int. Cl. B65f *5/00*

U.S. Cl. 214—628 **7 Claims**

A trash removal system with remotely located trash collection bins and a container chargeable from the bins, the container being automatically charged in response to a loading condition of an individual bin. Signalling means associated with the bins automatically causes the container to travel to the bin by means of an elevator control assembly. Emptying of the bins is initiated when the container has reached a charging location and an appropriate signal has been communicated to



the bin. The bins are individually operated to automatically dump their contents into the awaiting container. The containers are further manipulated for emptying or removal when they reach a handling zone.

3,767,075

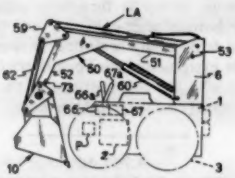
BUCKET LOADER

John H. Leverenz, West Bend, Wis., assignor to Gehl Company, West Bend, Wis.

Filed Nov. 22, 1971, Ser. No. 200,898

Int. Cl. E02f *3/00*

U.S. Cl. 214—776 **2 Claims**



A mobile loader having a vertically positionable bucket which can be used in earth working operations and the like and which can lift, transport, and dump a load as well as scrap the earth for levelling thereof.

The loader has a hydraulically operated, parallel linkage arrangement for maintaining the bucket level regardless of its vertical position. The mounting linkage for the bucket is also such that the bucket can be moved to a completely dumping position for good clean-out of the bucket, it can be maintained in a level position regardless of its vertical position while at the same time the linkage and its associated hydraulic system permit the bucket to be moved to a lower, scraping position in which it is generally curled inwardly to provide good scraping action.

The above described loader also has a quick attachment means for attaching the bucket to the linkage mechanism and by means of which the operator can simply drive the vehicle up to the rear side of the bucket and then manipulate the linkage to attach the bucket.

3,767,076

PLASTIC CONTAINER

Leo J. Kennedy, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

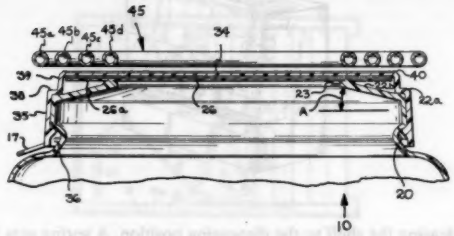
Filed Aug. 12, 1971, Ser. No. 171,215

Int. Cl. B65d *41/18, 41/62*

U.S. Cl. 215—40 **5 Claims**

A package for containing liquid is provided. The package includes a plastic container, a fluid tight membrane sealingly

engaged thereto, said membrane having a tear tab portion, extending completely around its periphery, and a closure engaged to the container over the membrane. A method for sealing the package is also provided.

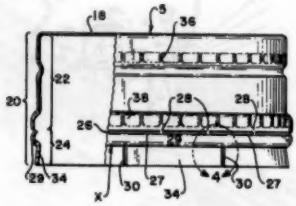


3,767,077

PILFER-PROOF CLOSURE CAP

John S. Rhoades, Lafayette, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Apr. 20, 1972, Ser. No. 245,844
Int. Cl. B65d *41/34*
U.S. Cl. 215—42 14 Claims



This invention relates to a pilfer-proof closure for a bottle top and the like having a threaded neck portion and a locking shoulder. The closure is provided with a sealing and locking ring adapted to be turned under the locking shoulder of the bottle top when the bottle top is sealed and this ring contains a plurality of circumferentially spaced vertical weakening lines or scores. The scores advantageously have tapered or differential depths which provide an improved controlled fracture and outward flaring of the sealing ring segments and overall ring when the pilfer-proof closure is twisted during opening of the bottle.

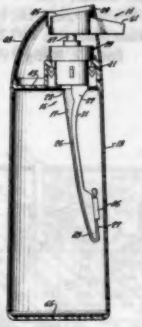
3,767,078

BLADDER TYPE DISPENSER

Norman Gortz, 11151 Coventry Pl., Santa Ana, and Michael B. Maccarone, 17932 Gillman Ave., Irvine, both of Calif.

Filed Nov. 3, 1970, Ser. No. 86,506
Int. Cl. B65d *25/14, 35/28*
U.S. Cl. 220—63 R 17 Claims

A dispenser wherein a resilient bladder is stretched over a curved surface presented by a supporting rib which extends into the dispenser. Both the bladder and the supporting rib are elongated and are anchored at one end in a dispensing valve assembly mounted in a wall of the dispenser. The bladder is open at its anchored end and communicates with a valved passage in the valve assembly so as to discharge its contents therethrough. At its opposite end, the bladder is closed and, to make sure that it will expel all of its contents, is attached to the supporting rib in such a manner as to put the body of the bladder into tension along its length.

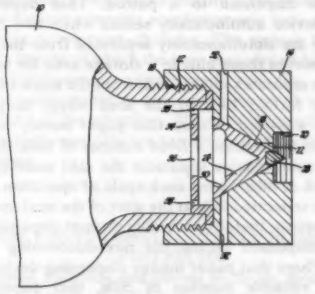


3,767,079

PRESSURE VESSEL SEALING ARRANGEMENT

Trevor O. Jones, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 10, 1972, Ser. No. 252,345
Int. Cl. F16k *17/14, 17/38*
U.S. Cl. 220—89 A 5 Claims



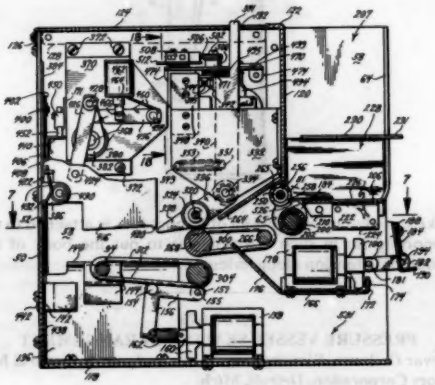
A pressure vessel includes an end wall structure having a combined filling and outlet port in the form of a truncated conical bore therethrough which tapers outwardly toward the vessel interior. A hollow conical seal of frangible material fits within the bore and seats against the bore wall. The seal is displaced from the bore wall to provide a check valve permitting filling of the vessel with pressure fluid through the port and sealingly engages the bore wall under the pressure of the fluid in the vessel after the vessel is filled. An explosive primer or detonator mounted in the apex of the seal breaks the seal when detonated to open the port. The wall of the conical bore guides the fragments of the seal through the port ahead of the outrushing pressure fluid. One or more pressure relief ports extend radially of the bore and communicate with the seal adjacent the basal end thereof. The seal is weakened at this area by an internal groove and ruptures when a predetermined pressure is reached in the vessel to permit the escape of the pressure fluid through the relief ports. The seal may be made of materials which weaken at elevated temperatures to provide for its rupture and release of the pressure fluid through the ports when such temperatures are reached. The seal may also be made of electrically conductive materials to provide a means of sensing maintenance of the sealing arrangement.

3,767,080

MONEY-HANDLING DEVICE

Gustav F. Erickson, Hot Springs, Ark., assignor to U.S.C. Industries, Inc., St. Louis, Mo.

Division of Ser. No. 55,501, July 16, 1970, Pat. No. 3,701,523.
This application Mar. 20, 1972, Ser. No. 236,506
Int. Cl. B65g *59/06*
U.S. Cl. 221—13 9 Claims



A paper money dispensing device stores bills in stacked relation, successively separates the lowermost bill from the stack of bills, and moves the separated bills to an area where they can be dispensed to a patron. That paper money dispensing device automatically senses when two bills stick together and are simultaneously separated from the stack of bills; and it moves those bills to a storage area for safe-keeping, and then separates further bills from the stack of bills and moves those further bills to the area where they can be dispensed to a patron. Where that paper money dispensing device is used to dispense a fixed number of bills, that paper money dispensing device separates the said number of bills from the stack of bills during each cycle of operation and then dispenses the separated bills at the start of the next-succeeding cycle of operation; thereby providing prompt dispensing of the bills to be dispensed during the next-succeeding cycle of operation. Where that paper money dispensing device is used to dispense variable number of bills, that paper money dispensing device separates the desired number of bills from the stack of bills and prompty dispenses the separated bills. That paper money dispensing device dispenses all of the bills of the desired number of bills at the same instant, and it folds those bills as they are dispensed; thereby minimizing the likelihood that a patron would inadvertently fail to take all of the bills due him.

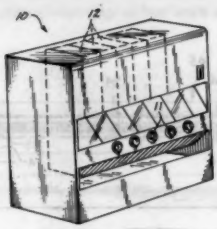
3,767,081

ARTICLE STORING AND DISPENSING DEVICE

Francis A. Wittern, 1616 Casady Dr., Des Moines, Iowa

Filed Mar. 24, 1972, Ser. No. 237,779
Int. Cl. G07f *11/06*
U.S. Cl. 221—90 6 Claims

An article storing and dispensing device having a plurality of hinge mounted shelves positioned one above another. The shelves are initially releaseably locked in the storing position, and then individually released to a dispensing position beginning with the lowermost shelf and working upwardly. The release mechanism includes a nudger bar carrying a plurality of trip fingers. The trip fingers are successively switched to the release position as their corresponding shelves are pivoted. The shelves include a rigid L-shaped retaining rod extending rearwardly of the main body portion of the shelf for engagement with a holding notch in a frame. The retaining rod is forced out of the notch by a trip finger moving upwardly,



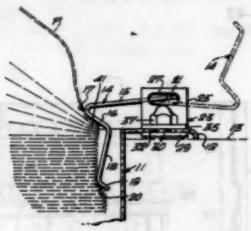
releasing the shelf to the dispensing position. A spring acts to bias the retaining rod in the storing position.

3,767,082

SELF-ADJUSTING PLATE SEPARATOR FOR SELF-LEVELING PLATE DISPENSERS

Bruce House, Miami, Fla., assignor to Shelley Manufacturing Company, Miami, Fla.

Filed Feb. 1, 1971, Ser. No. 111,317
Int. Cl. A47f *1/06*
U.S. Cl. 221—279 4 Claims



A plate separator for use with disposable paper or plastic plates being dispensed from a self-leveling well-type plate dispenser and comprising a bent metal body member swingably arranged at one end with respect to one side of the dispensing well opening is described. The bent sheet metal body member is formed along its length into a reversely bent nose portion adapted to abuttingly engage marginal underside portions of upside-down stacked and upwardly pressed plates at one side of the dispenser well, which nose portion merges into a donwardly extending abutment portion adopted to limit the rotative swinging movement of the body member during the dispensing of plates, while at the same time urging a plurality of uppermost plates in the stack into abutting position against the other side of the well for proper co-operation with the nose portion in "fanning out" a lesser plurality of the uppermost plates for dispensing.

3,767,083

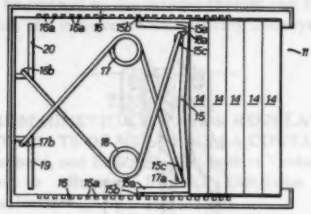
DISPENSER FOR SHAVING UNITS

Philip E. Webb, Slough, England, assignor to Wilkinson Sword Limited, London, England

Continuation of Ser. No. 5,861, Jan. 26, 1970, abandoned.
This application Sept. 6, 1972, Ser. No. 286,693
Claims priority, application Great Britain, Jan. 28, 1969, 4,753/69
Int. Cl. B65d *83/10*
U.S. Cl. 221—279 1 Claim

A razor blade dispenser adapted to contain a plurality of razor blades comprising a housing for the razor blades, an

opening in the housing through which a razor blade can be withdrawn, resilient means for urging the razor blades in the



direction of the opening and means for preventing the razor blades moving in the opposite direction.

3,767,084

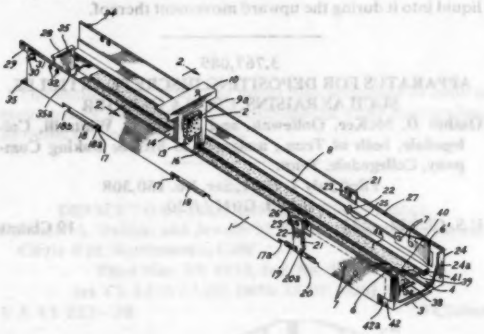
COMMODITY VENDOR APPARATUS

Jack E. Bayha, Ann Arbor, Mich., assignor to Cartrette, Inc., Tecumseh, Mich.

Continuation of Ser. No. 226,065, Feb. 14, 1972. This application Feb. 27, 1973, Ser. No. 336,229

Int. Cl. B65g *59/02*

U.S. Cl. 221—279 **27 Claims**



An anti-theft commodity vendor apparatus for dispensing items from a vending machine which is capable of dispensing soft as well as hard commodity items without damage or misfunction. The vendor apparatus, which converts reciprocating motion to intermittent uni-directional motion, comprises, in combination: a tray; first and second track members disposed in the tray bottom and adapted to engage each other when the first member moves a predetermined distance forward or backward; a movable driving member in the tray to engage commodity items placed in the tray; first means for selectively engaging the driving member and the first track member; and second means for engaging the driving member and the second track member. The selective engaging means engages the driving member and the first track member only when the first track member moves forward, and the second engaging means engages the driving member and the second track member when the second track member moves backward. By moving the track members back and forth, with the second member moving a smaller distance than the first member, the driving member moves forward to expel items from the tray. Preferably, the selective engaging means comprises a fiber mat containing oriented fibers, slanted in one linear direction.

3,767,085

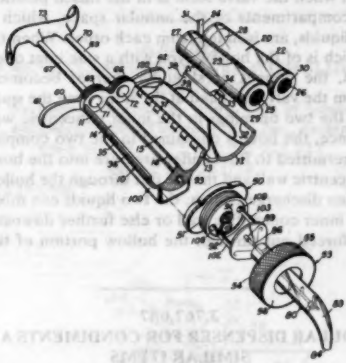
MIXING SYRINGE

James L. Cannon, 578 S. Enota Dr., N.E., and Richard S. Kinsey, 1415 Atlanta Rd., both of Gainesville, Ga.

Filed Aug. 2, 1971, Ser. No. 168,056

Int. Cl. B67b *7/28*

U.S. Cl. 222—82 **1 Claim**



A double barrel carpule type syringe having, at its discharge end, a common mixing and dispensing chamber provided with a rotary agitator driven from a motor on the syringe. One barrel of the carpule contains an elastomeric base material and the other an accelerator, therefor. The syringe has a double plunger by means of which the base material and the accelerator are simultaneously discharged into the chamber in prescribed proportions as the mixed material is discharged from the end of the chamber. The mixing chamber assembly and the carpule assembly are readily removable from the body of the syringe.

3,767,086

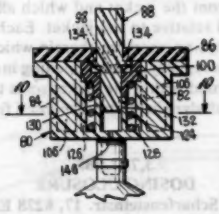
AEROSOL VALVE CONSTRUCTION FOR DISPENSING TWO FLUIDS

Wolf Steiman, Fairfield, and Steven W. Beres, Bridgeport, both of Conn., assignors to VCA Corporation, Greenwich, Conn.

Filed June 15, 1971, Ser. No. 153,170

Int. Cl. B67d *1/04*

U.S. Cl. 222—136 **5 Claims**



A codispensing valve construction for small hand-held aerosol type dispensers, comprising a tubular valve housing characterized by concentric inner and outer walls, with an annular space between said walls. The annular space is parti-

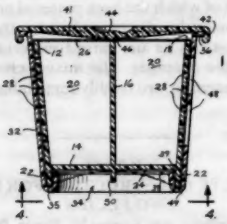
tioned into two compartments, and tubular projections on the housing connect such compartments respectively with the interiors of two separated containers which can have different liquids and also a propellant. An annular valve seat sealingly engages the top edges of the annular walls of the valve housing and is also engageable by a poppet-vavle or shoulder on a depressible valve stem which passes vertically through the center of the seat. The valve stem also has a resilient spool valve portion which rides in the bore of the inner one of the concentric walls and closes off two passages at the top of the inner wall when the valve stem is in the raised position. Thus the two compartments of the annular space, which contain separate liquids, are isolated from each other. When the valve stem (which is of the hollow type with a side inlet opening) is depressed, the poppet or shoulder thereof becomes disengaged from the valve seat and at the same time the spool valve uncovers the two openings in the inner concentric wall. As a consequence, the liquids contained in the two compartments are now permitted to flow under pressure into the bore of the inner concentric wall and thence out through the hollow valve stem. When discharge occurs, the two liquids can mix as they enter the inner concentric wall or else further downstream as they are forced out through the hollow portion of the valve stem.

3,767,087

MODULAR DISPENSER FOR CONDIMENTS AND SIMILAR ITEMS

Henry D. Shannon, 324 U.S. 20 West, Michigan City, Ind.

Filed Aug. 14, 1970, Ser. No. 63,763
Int. Cl. A23l *1/22*
U.S. Cl. 222—144.5 **9 Claims**



A modular dispenser which includes a cellular unit consisting of one or more individual cellular parts. The cellular unit fits within a tubular jacket and is retained therein by means of a snap-fitting cap. The cellular unit includes a tab which projects outwardly from the jacket and which allows the cellular unit to be rotated relative to the jacket. Each cellular part of the cellular unit has an aperture therein which may be selectively brought into registry with an opening in the jacket as the cellular unit is turned within the jacket so as to allow the contents within the cellular part to be dispensed from the unit.

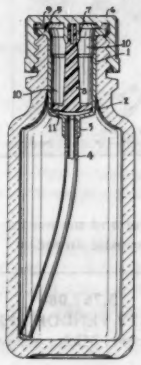
3,767,088

DOSING CLOSURE

Werner Deussen, Scharfensteinstr. 17, 6228 Eltville, Germany

Filed Apr. 2, 1971, Ser. No. 130,606
Claims priority, application Germany, Feb. 15, 1971, P 21 07 074.6
Int. Cl. A47l *1/035*
U.S. Cl. 222—205 **15 Claims**

A dosing closure device for use with a container for storage of liquids and adapted to dispense from the liquid only a predetermined quantity each time the closure is removed from its closed position, the closure includes a measuring beaker member tightly fit into the open end of the container, a conduit communicating with the measuring member for conveying the liquid thereinto, a cap member having threads thereon cooperating with corresponding threads on the container neck for securing it to the container; a piston member attached to the cap member and adapted to move therewith upward and downward in the measuring beaker member for sucking the liquid into it during the upward movement thereof.

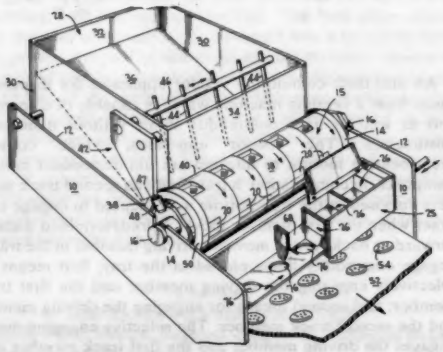


3,767,089

APPARATUS FOR DEPOSITING DISCRETE ARTICLES, SUCH AS RAISINS, UPON A CARRIER

Oather D. McKee, Ooltewah, and Robert L. Whitmill, Collegedale, both of Tenn., assignors to McKee Baking Company, Collegedale, Tenn.

Filed July 7, 1971, Ser. No. 160,308
Int. Cl. G01f *11/20*
U.S. Cl. 222—221 **19 Claims**



An apparatus deposits discrete articles such as raisins upon an endless belt or upon objects such as unbaked cookies carried on the endless belt. The apparatus contains a storage hopper in which the discrete objects are stored until they are discharged into pockets on a rotating cylinder, disposed adjacent to the outlet of the storage hopper. The cylinder is rotated to a position where the discrete articles within the

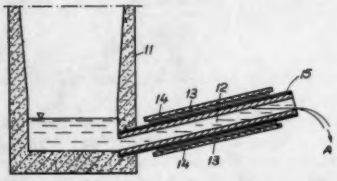
pockets thereof are forced out of the pockets by the movable bottom portions of the pockets. The discrete articles from the pockets fall into a hopper means which is located directly above a moving carrier, such as an endless belt, the hopper means having controllable door means which permits the hopper to be opened so the articles therein can fall upon the belt or upon the unbaked cookies being conveyed upon the belt.

3,767,090

ELECTROMAGNETIC VALVE FOR REGULATING THE FLOW-RATE OF MELT FROM A CONTAINER

Yngve Sundberg, and Erik Svensson, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolag, Vasteras, Sweden

Filed Jan. 18, 1971, Ser. No. 107,222
Claims priority, application Sweden, Jan. 20, 1970, 623/70
Int. Cl. B22d *37/00*
U.S. Cl. 222—383 **4 Claims**



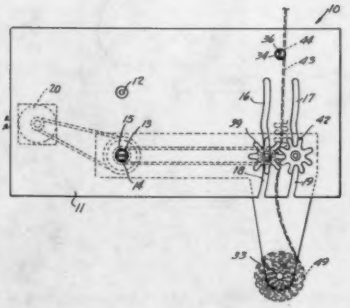
The outflow rate of molten metal from a furnace or ladle is regulated by a multiphase electromagnetic valve surrounding an outlet of the furnace or ladle.

3,767,091

DEVICE TO RUFFLE OR PLEAT MATERIAL

Sylvester A. Dalske, and Jewelle M. Dalske, both of 110 Caselli Circle #11, Sacramento, Calif.

Filed Mar. 27, 1973, Ser. No. 345,470
Int. Cl. A41h *43/00*; D05b *35/08*; D06j *1/00*
U.S. Cl. 223—32 **5 Claims**



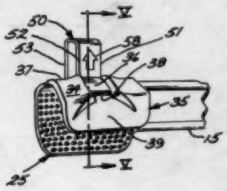
A device to ruffle or pleat material and feed the pleated material onto a supporting wire or needle. The material is pleated by a pair of gears spaced apart vertically on one shaft by a smaller diameter gear with the pair of gears meshing with a similar pair of gears on an adjacent shaft separated by a smaller diameter gear. A needle or wire support is positioned with its arrow pointed in between the teeth of the small gears in line with the axis of the gear supporting shafts. A roll of material to be pleated is supported on a vertical pin positioned substantially centrally of the gears and the end is held so as to be fed through the gears. The gears are driven by an electric motor connected by belts to one of the shafts. The gears can be swung to adjust them with respect to the end of the needle or supporting wire so that different length needles and wires may have the pleated material forced thereon.

3,767,092

GARMENT CLAMPING HANGER WITH SLIDABLE LOCKING CLIP

Judd F. Garrison, and John H. Batts, both of Grand Rapids, Mich., assignors to John Thomas Batts, Inc., Zeeland, Mich.

Filed Jan. 31, 1972, Ser. No. 221,917
Int. Cl. A47j *51/14*
U.S. Cl. 223—96 **41 Claims**



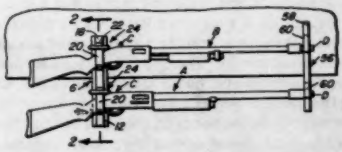
A clamping hanger has a body including an integrally molded hook and clamping means comprising at least a pair of gripping members, one member of which is integrally formed with the body. The other gripping member is hingedly coupled to the one member for movement of the members between open and closed positions such that a garment or the like can be held between the gripping members when in a closed position. The gripping members are secured in the closed position by means of a locking clip slidably mounted within recesses provided in the gripping members and held therein by means of a retaining bar spanning the recess of at least one of the gripping members.

3,767,093

MANUALLY OPERATED VEHICLE MOUNTED GUN LOCK

Martin L. Pinkerton, P.B. Box 362, and Oscar J. Duderstadt, both of Junction, Tex.

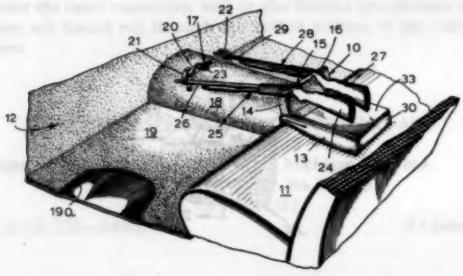
Filed Nov. 26, 1971, Ser. No. 202,103
Int. Cl. B60m *11/00*
U.S. Cl. 224—1 R **6 Claims**



For use on a motor vehicle or the like, at least one readily applicable and removable gun holder. Each holder is characterized, broadly stated, by an adapter unit capable of being accessibly mounted on a predetermined area of the vehicle. A bracket is superimposed and fixed on the adapter unit and is

provided with at least one upwardly opening U-shaped stirrup for reception and retention of the stock of the gun. A complemental shackle is provided and has a journal pivotally mounted in bearings provided therefor in walls of the adapter. The other end is provided with a hook for retentively but releasably coacting with the stirrup, that is, in a manner to seat and safely retain the gun stock within the confines of the stirrup. A key controlled lock is operably confined within a hollow portion of the adapter. Then too, securing and releasing means is cooperatively associated with the key controlled lock and journal, respectively, for controlling the pivotal movement of the journal.

3,767,094
GUN HOLDER
Robert L. F. Sikes, Route 1, Crestview, Fla.
Filed Feb. 25, 1972, Ser. No. 230,164
Int. Cl. F41c *33/00*
U.S. Cl. 224—1 R **8 Claims**

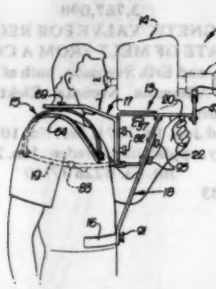


A gun holding apparatus for holding guns on a vehicle seat including a gun holder device having a base and a support member extending upwardly from the upper forward portion of the base. The lower portion of the base has a flexible container for holding lead shot or similar weighting material for assisting in holding the gun holding device on the vehicle seat. Two U-shaped notches are provided in the upper forward end of the support member for holding portions of guns that have other portions resting on or near the floor of the vehicle. A slip resistant coating covers the underside of the flexible container and assists in preventing the gun holding device from sliding on the vehicle seat. A second gun holding device is also provided which is located on the floor of the vehicle and has hook members for holding the portions of the guns which are on or near the vehicle floor.

3,767,095
CAMERA SUPPORTING HARNESS
Richard B. Jones, 930 W. Edgehill Rd., San Bernardino, Calif.
Filed June 18, 1971, Ser. No. 154,466
Int. Cl. A45f *5/00*
U.S. Cl. 224—5 V **17 Claims**

A sheet metal strap is bent and united at its ends to form a small trapezoidal frame including horizontal top and bottom walls, a vertical back wall and a front wall, a short upper portion of which is vertical and the balance of which slopes rearwardly and downwardly. The top frame wall forms a camera supporting platform and has a thumb screw for temporarily securing the camera thereto. The aforesaid frame and camera are firmly supported on the right shoulder of the photographer by a flexible form-fitting upholstered strap, opposite ends of which are flexibly linked to inner faces of end portions of a rigid metal saddle bar, arched upwardly therefrom, and pivotally and adjustably connected in a mid section thereof with a horizontal arm of an angle bracket, the vertical front arm of which fits against and is adjustably connected to said frame back wall. A web belt adjustable in length and extending around the left side of the photographer's body snaps at its rear end onto a ring on the rear end of said saddle bar and at its front end, onto a ring on the bottom wall of said frame.

From directly beneath, said frame is supported also by a straight, rigid belly brace that lies flat against and is adjustably fixed to the sloping portion of the frame front wall, this brace being connected centrally at its lower end to a transverse arcuate belly fitting plate which conforms to the body of the photographer.



A forward extension of the camera supporting platform provides a pistol grip for use by either hand in steadying the camera and operating the camera shutter. This extension also provides a padded support for a telescopic camera lens housing where this is desirable

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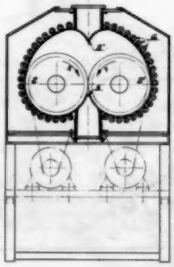
3,767,096
APPARATUS FOR DEFLASHING MOLDED ARTICLES
Giovanni A. Coscia, Milnate, Italy, assignor to Societe Generale Conseil So. Ge. Co., Zurich, Switzerland
Filed Nov. 10, 1971, Ser. No. 197,353
Claims priority, application Italy, Nov. 12, 1970, 31626 A/70
Int. Cl. B26f *3/00*
U.S. Cl. 225—97 **3 Claims**



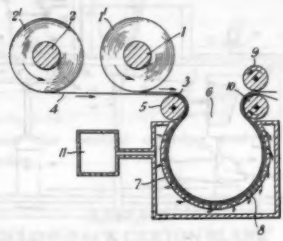
An improved deflashing apparatus comprises a container for the articles to be deflashed, a cooling system for said articles, and an agitating device within said container for imparting a movement to said articles with a direct mechanical action thereon and consequent removal of the flash which has become brittle owing to the cooling. In the most preferred embodiment the agitating device comprises a pair of rotating brushes and the inside of the container has an essentially bilobed shape.

3,767,097

HANDLING WEBS OF MATERIAL

Peter Edward Watts, Earley; Alan Walter Kent, Frimley, and Kenneth O'Riley, Weybridge, all of England, assignors to Vickers Limited, London, England

Filed Feb. 5, 1973, Ser. No. 329,369
Int. Cl. B65h *25/06*
U.S. Cl. 226—7 11 Claims



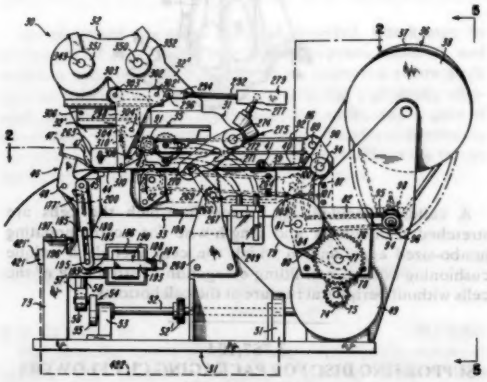
Relative displacement, at a working site, between first and second webs of material in face-to-face contact at that site is inhibited by selecting the first web to be of smaller surface area than the second at the site and by establishing thereat a reduced pressure adjacent that face of the first web which is away from the second web, thereby causing the second web to be drawn against the first web at the working site.

3,767,098

PRINTING APPARATUS

Robert M. Pabodie, Dayton, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Jan. 6, 1972, Ser. No. 215,820
Int. Cl. B65h *17/42*
U.S. Cl. 226—117 4 Claims



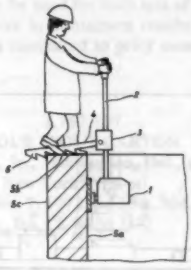
There is disclosed a printing, feeding and severing method and apparatus for carrying out the method. The apparatus includes a print head assembly and a platen assembly movable relatively toward and away from each other into and out of printing cooperation, mechanism for inking the print head assembly, mechanism for feeding a web of record members to between the print head assembly and the platen assembly, the web being in roll form and there being means to assist the gradual unwinding of the roll with gradual paying out of web material from the roll to the feeding mechanism, an idler contacting the web and disposed at a slight angle to the direction of feed of the web to cause the web to follow a feed edge, record severing means disposed downstream of the print head assembly and the platen assembly, and a modular support assembly of a print head of the print head assembly.

3,767,099

MEANS FOR HOLDING A FASTENING ELEMENT DRIVING DEVICE IN POSITION AGAINST A WALL SURFACE

Elmar Maier, Feldkirch-Tisis, Austria, assignor to Hilti Aktiengesellschaft, Liechtenstein, Liechtenstein

Filed Feb. 12, 1971, Ser. No. 114,901
Claims priority, application Germany, Mar. 18, 1970, P 20 12 908.2
Int. Cl. B25c *1/08*
U.S. Cl. 227—9 1 Claim



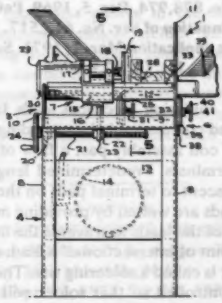
For attaching exothermic plates to a mold wall a tool for driving fastening elements by means of an explosive charge is secured to the lower end of an elongated upright support member and a support arm extends laterally outwardly from the support member across the top of the wall to which the plates are to be attached and the support arm has a serrated edge part which is arranged to engage the upper outer edge of the mold wall for holding the tool in place during the driving operation.

3,767,100

NAILING MACHINE

Jack Davis, Rt. No. 5, Box 363, Bristol, Tenn.

Filed Nov. 11, 1971, Ser. No. 197,671
Int. Cl. B25c *7/00*
U.S. Cl. 227—152 9 Claims



A machine for holding and nailing together the elements of sub-components of building structures, which includes a work

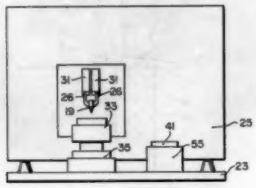
bed with a fence at one side and a movable ram to clamp the component elements against the fence. The ram is mounted upon a carriage for initial adjustment, and the ram carries a mount for an automatic nailer. Additional mounts for nailers are on the fence, whereby nailing from two sides can be effected. All nailer mounts permit vertical adjustment. The machine is supported on a frame, and a fluid tank, to supply fluid to operate the ram and nailers, forms part of the bracing of the frame. Means are provided for connecting supply and delivery conveyors to the machine.

3,767,101

PULSE VIBRATOR FOR THERMOCOMPRESSION BONDING

William D. Genrich, Costa Mesa, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 26, 1972, Ser. No. 221,015
Int. Cl. B23k *5/20*
U.S. Cl. 228—1 **8 Claims**



A standard thermocompression bonder is modified by the addition of a device which thumps the entire bonder including in particular a heated bonding capillary holding a wire lead and a device support holding the microcircuit to which the wire is to be bonded. The resulting brief damped vibration causes a scrubbing action between the wire tip and the circuit resulting in a superior thermocompression bond between them.

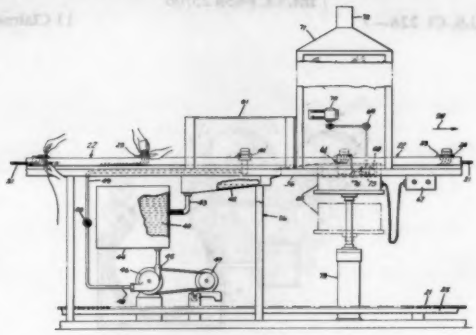
3,767,102

APPARATUS FOR SOLDERING ELECTRICAL LEADS TO TERMINALS ON A CORE AND COIL ASSEMBLY

Robert H. Parsons, Danville, Ill., assignor to General Electric Company, Indianapolis, Ind.

Division of Ser. No. 878,974, Dec. 5, 1969, Pat. No. 3,585,708, which is a continuation of Ser. No. 612,517, Jan. 30, 1967, abandoned. This application Mar. 1, 1971, Ser. No. 119,859
Int. Cl. B23k *1/08*
U.S. Cl. 228—37 **9 Claims**

Apparatus for soldering electrical leads to terminals of a magnetic core and coil assembly by providing means for moving the core and coil assembly past a flow of solder to solder the leads and terminals. Predetermined lengths of leads are held in place adjacent to terminal pads on the assembly as the terminals and leads are wetted by providing means for causing at least the ends of the leads to traverse the crest of a cascade of solder. The point of intersection of a lead, a terminal, and a cascade of solder is called a soldering site. The direction of the solder flow is controlled so that solder will not contact the core and coil. A rail of a conveyer both supports the terminal pads and gauges the length of lead inserted in the terminals. The conveyor includes a trough along which the free ends of the leads may slide. The conveyor moves the assembly along a solder emitting orifice. As the terminals traverse the orifice at least the ends of the leads contact the flow of solder to wet the



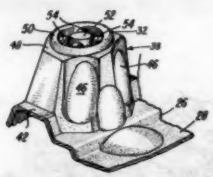
ends of the leads and adjacent portions of the terminals with molten solder.

3,767,103

EGG CARTON CELLS FOR JUMBO-SIZED EGGS

Richard F. Reifers, Canaan, Conn., assignor to Diamond International Corporation, New York, N.Y.

Continuation of Ser. No. 117,249, Feb. 22, 1971, abandoned. This application June 20, 1972, Ser. No. 264,606
Int. Cl. B65d *85/32*
U.S. Cl. 229—2.5 **8 Claims**



A cellular, molded egg carton in which the cells are stretched transversely and length-wise for accommodating jumbo-sized eggs, and in which the cells include a unique cushioning bottom permitting elongation or stretching of the cells without peripheral rupture at the cell bottoms.

3,767,104

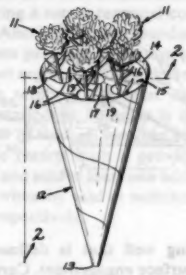
SUPPORTING DISC FOR PACKAGING CUT FLOWERS AND THE LIKE

Carl E. Bachman; Richard E. Miller, and Edwin H. Smoots, all of Minneapolis, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

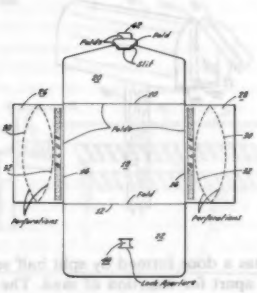
Filed Oct. 14, 1971, Ser. No. 189,243
Int. Cl. B65d *83/00, 3/06*
U.S. Cl. 229—7 R **1 Claim**

A supporting and spacing disc for a conical paper flower container. The disc has a plurality of spaced tear-shaped openings for flower stems disposed adjacent its peripheral edge, and a single opening disposed in the central portion

thereof. For simple flower removal, the disc is slotted between each tear-shaped opening and the peripheral edge, and is perforated between the central opening and at least one peripheral opening.



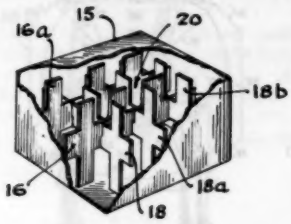
3,767,105
PILLOW-PACK CARTON BLANK
Glen Matsuyama, Los Angeles, Calif., assignor to Graphic Arts Packaging Corp., Gardena, Calif.
Filed Aug. 25, 1972, Ser. No. 283,934
Int. Cl. B65d *5/08, 3/00*
U.S. Cl. 229—8 **4 Claims**



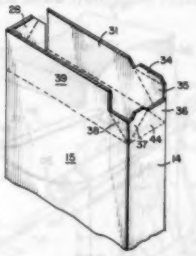
An improved one-piece blank is provided, which may be composed of paperboard or other appropriate material, and which is used in the fabrication of an improved pillow-pack type of package or carton; the carton having a generally ellipsoid configuration with reinforced end walls, and a pair of cover flaps which extend around elliptical surfaces formed by the end walls, the cover flaps including mutual locking means for holding the cover flaps in a closed condition.

3,767,106
CONTAINER PARTITIONS
Robert L. Morgan, 370 E. Arion, West St. Paul, Minn.
Filed Sept. 20, 1967, Ser. No. 669,068
Int. Cl. B65d *81/00*
U.S. Cl. 229—15 **10 Claims**

Partitions for containers are provided which have one set of aligned flat, parallel members extending along a first direction, and a second set of transverse, flat, aligned parallel members extending along a second direction. The members of the first set are joined to the members of the second set so that they define a plurality of four sided cells in which articles are deposited. Each member or module has an intermediate body section and a plurality of upper extending members which are aligned with a plurality of lower depending members. Spaces or cut-outs are provided between upper and lower depending members so that each cell is formed by the four upper extending members and four aligned depending members with four cut-outs at the upper corners of the cell and four cut-outs at the lower corners of the cell. The aligned upper and lower depending members form an effective vertical contact area for the deposited article, and the intermediate body section provides an effective horizontal contact area for the deposited article in the cell. The cut-outs may have different forms, but a uniform module may be used for both sets of rows. The use of the partition members in containers results in a substantial saving of material as compared to prior unmodified partition members.



3,767,107
POUR SPOUT CARTON
Hampton E. Forbes, Jr., Wilmington, Del., assignor to Westvaco Corporation, New York, N.Y.
Filed Nov. 7, 1972, Ser. No. 304,465
Int. Cl. B65d *5/72*
U.S. Cl. 229—17 R **4 Claims**

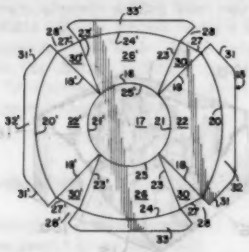


The present invention relates to a carton having integral collapsible pour spout opening which can either be extended into a spout or collapsed to form a flush top closed package. The pour spout portion of the carton is formed by a series of cut and scored triangular panels in the top closure flaps thereof which triangular panels include an attached cover panel for overlying the pour spout panels and the pour spout opening when the carton is not in use, the improvement comprising the arrangement of the various pour spout panels and the cover panel to permit access to the pour spout without the necessity of providing tear-away elements or perforated areas in the carton top.

3,767,108
SINGLE SERVING PACKAGE
Edwin L. Arneson, Hillsdale, N.J., assignor to Federal Paper Board Company, Inc., Montvale, N.J.
Filed Apr. 13, 1971, Ser. No. 133,685
Int. Cl. B65d *5/24, 3/00*
U.S. Cl. 229—31 **1 Claim**

A container or package which is particularly adapted for disposable single use in the packaging of products such as, for

example, food, where the container may be filled with a portion of the product suitable for a single serving and capable of being consumed from the package. The container is formed



from a single paperboard blank which is cut and scored so that it may be folded into a cup-like, or dish-like, body shape which is leakproof and which has an edge flange or margin to which the margins of a cover film may be secured.

3,767,109

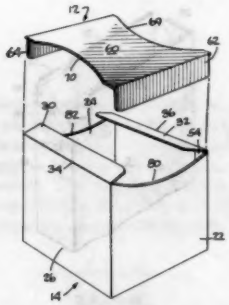
BOX COVER AND COMBINATION COVER AND BOX

Richard E. Paige, New York, N.Y., assignor to Gift Box Corporation of America, New York, N.Y.

Filed Apr. 17, 1972, Ser. No. 244,747

Int. Cl. B65d *43/00*

U.S. Cl. 229—43 **11 Claims**



An improved box cover and combination box and cover are disclosed wherein the cover is flat and includes a central portion and two end portions hingedly attached to opposite ends thereof. The cover is for use with a box having side and end walls and two flaps extending inwardly from the opposed end walls. The end portions of the cover are adapted to be received between the flaps and the box side walls adjacent the flaps.

3,767,110

CARTON WITH HINGE LATCH CLOSURE

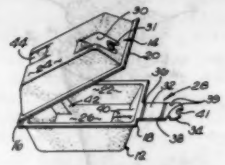
Wayne Congleton, Whittier, Calif., assignor to Dolco Packaging Corporation, North Hollywood, Calif.

Filed Dec. 22, 1971, Ser. No. 210,995

Int. Cl. B65d *45/20, 43/00*

U.S. Cl. 229—45 **8 Claims**

A carton is disclosed including a pair of space-defining members, each with a closing edge and further including an integral hinge-latching structure. A tab or flap extends from one of the closing edges to pass beyond the edge of the other member, then extends normally or parallel to the edges, and is



received in a locking well that is defined in the second member for mating surface engagement. Cartons are disclosed with the closure structure functioning both as a hinge and a latch.

3,767,111

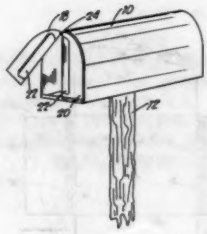
AUTOMATIC MAIL BOX DOOR

Ralph M. Pattengill, Charleston, Mo., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Aug. 18, 1972, Ser. No. 281,825

Int. Cl. B65d *91/00*

U.S. Cl. 232—17 **2 Claims**



A mail box has a door formed by split half sections which can be pushed apart for insertion of mail. The door can be swung downward as a unit to provide access for removing mail.

3,767,112

FREQUENCY PRESETTING EQUIPMENT

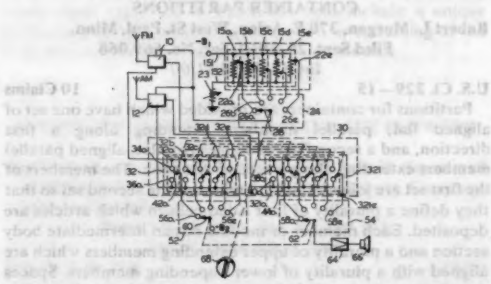
Hirohiko Tonari, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 27, 1971, Ser. No. 175,519

Claims priority, application Japan, Aug. 28, 1970, 45/75855

Int. Cl. H03j *5/06*

U.S. Cl. 334—1 **7 Claims**



Frequency presetting equipment adapted for a tuner device including $n(n>1)$ tuning circuits each having plural tuning

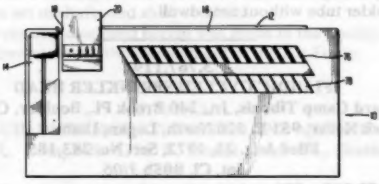
diodes. The apparatus comprises $m(m>n)$ potentiometers in parallel connection one end of which is to be connected to a first power source, a first rotary switch having m stationary contacts connected to m movable terminals of said m potentiometers and having a rotary terminal connected to said plural tuning diodes. Also included are band selection means consisting of at least one parallel connection of m switches each of which has n contact segments coupled to said n tuning circuits and one common terminal. At least one additional rotary switch having m stationary contacts is connected to said m common terminals of said m switches and has a rotary terminal and a single rotary knob is provided for rotating said first rotary switch and said at least one additional rotary switch at the same time whereby said m switches respond to said m potentiometers, respectively.

3,767,113

AUTOMATIC ARTICLE SORTING AND PUNCHING MACHINE

John W. Dillard, 327 Leton Dr., Columbia, S.C.; Dominick Tringali, 1322 Kathwood Dr., Columbia, S.C.; Richard L. Swartz, 543 S. Beltline Blvd., Columbia, S.C., and Ernest M. Hinson, Jr., 1731 Graeme Dr., Columbia, S.C.

Filed Apr. 20, 1971, Ser. No. 135,656
Int. Cl. G06k *7/01, 1/04*
U.S. Cl. 234—40 **10 Claims**



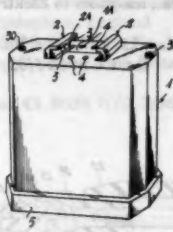
An automatic sorting machine for automatically sorting record receivers according to the elapsed time data printed thereon and for automatically punching the record receivers in accordance with printed time of day data appearing on the receivers. The machine includes apparatus for serially feeding record receivers to a scanning station having three scanning heads mounted to scan and convert printed data into radiant energy pulses that are analogues of the data. The pulses are sensed and converted to elapsed time and time of day BCD (Binary Coded Decimal) analogues. The elapsed time BCD analogues are applied as inputs to elapsed time error checking and correction logic which automatically corrects for error appearing in the printed data on the record receiver to generate elapsed time signals. The elapsed time signals are applied by electronics to selectively operate gate solenoids related to specific record receiver storage bins in the sorting machine. The time of day BCD analogues are applied as inputs to time of day error checking and correction logic which provides time of day signals corrected as stated above to selectively energize punch solenoids. The punch solenoids are energized by the signals while the record receivers are at the scanning station after which the record receivers are released to be automatically transported by the machine and stored in the bins selected by the elapsed time data. All logic is automatically restored in timed sequence with machines' rate capability for storing documents.

3,767,114

DEVICE FOR RETAINING RAILS OF MINIATURE TRAINS

Alessandro Rossi, Como, Italy, assignor to Rivarossi S.p.A., Como, Italy

Filed Nov. 23, 1971, Ser. No. 201,345
Int. Cl. A63h *19/00*
U.S. Cl. 238—10 E **7 Claims**



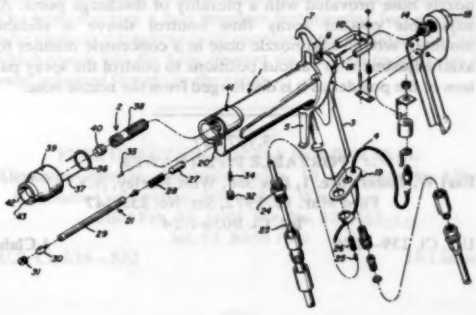
A device for supporting rail sections for miniature trains to obtain viaducts or grades, comprising pillars having at their upper ends spaced hook like extensions provided with engaging fingers for engaging cooperating hook like extensions at the ends of the rail sections.

3,767,115

ELECTROSTATIC SPRAY GUN APPARATUS

David Arthur Kozinski, Palatine; Joseph Kozinski, Chicago; Frank M. Singel, Hillside, and Robert G. Smead, Saint Charles, all of Ill., assignors to Graco Inc., Minneapolis, Minn.

Filed Dec. 27, 1971, Ser. No. 212,335
Int. Cl. B05b *5/00;* **F23d** *11/28*
U.S. Cl. 239—15 **15 Claims**



An electrostatic spray gun assembly used to spray coating materials. Normally, the invention is useable with the type of spray gun commonly referred to as an airless electrostatic spray gun. The primary advantage of this invention over the prior art is its ability to operationally function with low resistive materials or materials with a high percentage of conductive aggregates. This ability is accomplished by completely electrically insulating the charging elements from the coating material passage while in the gun body. Charges are placed on the coating material by an external electrode that sets up an electrostatic field between the gun and the object to be coated. The nozzle cap that holds the electrode and retains the spray tip can be rotated 360° until it reaches a tightened fixed position. Electrical contact with the electrode is maintained by a conductive ring no matter what the final tightened orientation. The ring and its attached electrode can be selectively adjusted to insure proper placement of the charges on the coating material regardless of the final orientation of the elec-

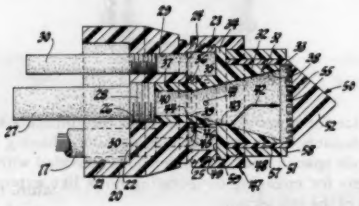
trode, when in its tightened position, or of the spray tip's orientation. The features of this invention are useable with both operator-actuated hand guns and automatic spray guns.

3,767,116

NOZZLE FOR ELECTROSTATIC POWDER SPRAYING APPARATUS

Claus Clausen, Odense, Denmark, and Frederick K. Jensen, Farmington, Mich., assignors to Elektro-Ion, Inc., Farmington, Mich.

Filed Mar. 23, 1972, Ser. No. 237,439
Int. Cl. B05b 5/02
U.S. Cl. 239—15 **29 Claims**



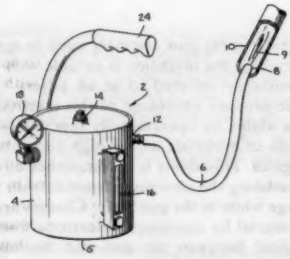
A spray nozzle for use with an electrostatic powder spray gun for coating objects in an electrostatic field. The nozzle includes an electrically non-conductive nozzle body for releasable attachment to the front end of a spray gun. An electrically non-conductive carrier member is operatively mounted in the front end of the nozzle body. The carrier member is provided with a powder diffusing chamber of diverging outward conical shape. An electrical charging means is operatively mounted in said chamber. The outer end of the chamber is enclosed by a nozzle nose provided with a plurality of discharge ports. An adjustable powder spray flow control sleeve is slidably mounted around said nozzle nose in a concentric manner for axial adjustment to various positions to control the spray pattern of the powder as it is discharged from the nozzle nose.

3,767,117

PORTABLE PIPE THAWER

Earl W. Baker, Rte. 1, Box 388, West Hurley, N.Y.

Filed Mar. 16, 1972, Ser. No. 235,347
Int. Cl. B05b 1/24
U.S. Cl. 239—136 **1 Claim**



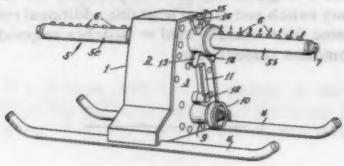
A portable device for thawing pipe, by delivering a pencil-like jet of steam to the interior frozen portion of the pipe. Water in a boiler is heated, converted into steam and fed through tubing which has been inserted in the pipe.

3,767,118

OSCILLATING WATER SPRINKLER

Edwin L. Oberto, Libertyville; David E. Ryan, Grayslake, and Jon C. Wiltberger, Round Lake, all of Ill., assignors to Burgess Vibrocrafters, Inc., Grayslake, Ill.

Filed Sept. 19, 1972, Ser. No. 290,398
Int. Cl. B05b 3/16
U.S. Cl. 239—242 **10 Claims**



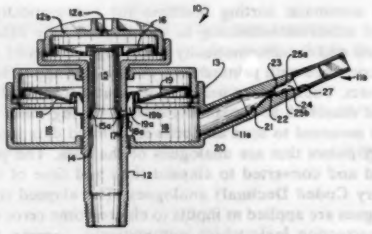
The sprinkler manifold tube is driven in oscillation about its axis by a hydro-mechanical system having only two moving mechanical parts. A valve actuated at the adjustably predetermined end of each sprinkler tube sweep switches the primary control streams of a fluidic system to signal deflection of a secondary control stream which merges with the controlled flow to fill at a steady rate the chamber on one side of a paddle-piston which is fixed to the sprinkler tube to drive the same. Simultaneously, water from the other side of the paddle is sucked from the chamber by the aspirating effect of the main flow of water to the sprinkler tube. Switching the flow of the primary control stream effects reversal of travel of the sprinkler tube without time dwell.

3,767,119

FLUIDIC CYCLED SPRINKLER HEAD

Edward Camp Tibbals, Jr., 240 Brook Pl., Boulder, Colo., and Jack Keller, 951 E. 320 North, Logan, Utah

Filed Aug. 23, 1972, Ser. No. 283,185
Int. Cl. B05b 3/06
U.S. Cl. 239—251 **8 Claims**



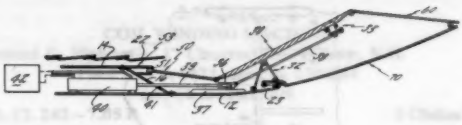
A sprinkler head for use in a rotary liquid sprinkler intended to spray within a full circle pattern around the sprinkler. Main stream liquid flow in the nozzle is directed through an orifice into either a spray path or into a reaction path. A diversion line is connected into the orifice such that flow therethrough deflects the main stream flow into the reaction path and a nozzle wall downstream of the orifice, is curved to insure adherence of the main stream to a wall of the reaction path when fluid through the diversion line impinges on the main stream flow. A reaction surface is positioned to be contacted by liquid discharged through the reaction path and such contact rotates the sprinkler head.

3,767,120

EXIT AREA SCHEDULE SELECTOR SYSTEM

Kenneth E. Harmon, Riviera Beach, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 20, 1971, Ser. No. 209,803
Int. Cl. B64c 15/08
U.S. Cl. 239—265.39 8 Claims



A nozzle having four sets of flaps is formed on the exhaust end of a turbojet engine. One set of main flaps is pivotally located downstream of an exhaust opening with a second set of balance flaps pivotally connected between said main flaps and the rear end of the engine. A third set of diverging flaps are pivotally mounted to the main flaps and extend downstream thereof with the downstream end of said diverging flaps being pivotally connected at their rearward end to a fourth set of external flaps which are pivotally mounted at their forward end to fixed structure with actuating means for translating the pivotal mounting to variably position the forward end of the external flaps. The actuating means comprises a bell crank for each external flap having one arm connected to the flap and one arm having a gear segment thereon which engages a worm gear to pivot the bell crank. All of the worm gears are mounted on shafts and the shafts are interconnected by shaft sections to move them all together, and spline connections are included on the spline sections for thermal growth. An actuating device rotates one shaft section to rotate the entire set of shafts and shaft sections.

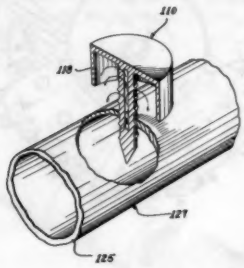
The invention disclosed herein was made in the course of or under a contract with the Department of the Air Force.

3,767,121

FLUID DISTRIBUTION SYSTEM AND METHOD

George L. Campbell, 4333 E. Desert Crest Dr., Scottsdale, Ariz.

Continuation-in-part of Ser. No. 205,211, Dec. 6, 1971, abandoned. This application Apr. 28, 1972, Ser. No. 248,655
Int. Cl. A62c 31/22
U.S. Cl. 239—272 4 Claims



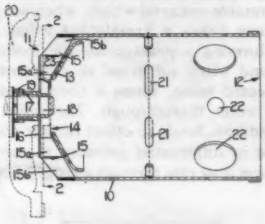
A fluid distribution system incorporating a conduit combined with a plurality of distribution heads is shown. The conduit is continuous and does not contain prearranged stations or distribution points to accept the heads; the heads are formed with threaded shanks terminating at one end in an unthreaded portion having a cap formed thereon. A fluid channel extends along a portion of the threaded shank and the opposite end of the shank is tapered to a point. The conduit is connected to a source of fluid under pressure and placed along a path passing through fluid utilization areas. The heads are then utilized to puncture the conduit and are subsequently threaded in to the conduit, exposing the fluid channel therein to the interior of the conduit to provide a passageway for the escape of fluid from the conduit outwardly to the fluid utilization area.

3,767,122

FLAME TUBES

Gordon Sedgwick, Nelson, England, assignor to Lucas Aerospace Limited, Birmingham, England

Filed July 28, 1972, Ser. No. 276,159
Claims priority, application Great Britain, Aug. 10, 1971, 37,447/71
Int. Cl. B05b 7/10, 7/06
U.S. Cl. 239—399 6 Claims



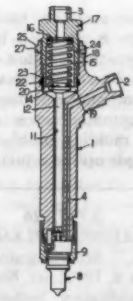
A flame tube for a gas turbine engine comprises a tubular element having an inlet and an outlet at opposite ends thereof. A frusto-conical baffle is mounted at the inlet of the tube element so as to direct air entering the inlet against the wall of the tube element. A plurality of vanes are secured to the baffle and to the tube element so as to locate the latter with respect to the baffle. The vanes, are mounted by means of a plate and a bush on a chamber within which the flame tube is mounted. The bush receives a fuel atomizer for injecting fuel into the tube element through an axial opening in the baffle and the air which passes into the tube element via the axial opening has a swirl imparted thereto by the vanes.

3,767,123

FUEL INJECTION NOZZLE HOLDER SEAL

Alexander Dreisin, Olympia Fields, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Feb. 25, 1972, Ser. No. 229,455
Int. Cl. B05b 1/00
U.S. Cl. 239—533 10 Claims



A fuel injection nozzle holder assembly and a differential valve pressure adjusting screw for accurately maintaining the differential valve opening pressure and lift.

3,767,124

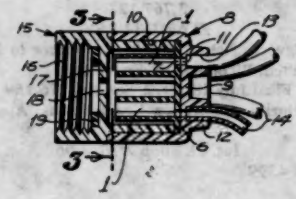
SELF-FLUSHING IRRIGATING VALVE

Lloyd Spencer, 220 Patrician Way, Pasadena, Calif.

Filed Apr. 19, 1972, Ser. No. 245,312

Int. Cl. B05b *15/02*

U.S. Cl. 239—542 **19 Claims**



A self-flushing irrigating valve formed, at least in part, of an elastically deformable material which, when subjected to differential pressures below a preselected value, occupies an open position forming a passage for the flushing of water therethrough; and when subjected to differential pressures above a preselected value, forms a constricted passage for trickle flow of water therethrough. The valve, when in its trickle flow condition, tends to effect further constriction on further increase in differential pressure thereby tending to produce a uniform flow rate through a range of effective pressures.

3,767,125

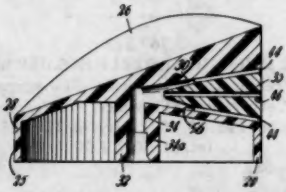
MULTIPLE ORIFICE AEROSOL ACTUATOR

Ernst Gehres, Kisco; Gilbert S. Jordan, Monroe, and Norman Usen, West Haverstraw, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 859,659, Sept. 26, 1969, abandoned, which is a continuation-in-part of Ser. No. 772,703, Nov. 1, 1968, abandoned. This application May 28, 1971, Ser. No. 148,167

Int. Cl. B05b *1/14*

U.S. Cl. 239—552 **7 Claims**



An aerosol actuator assembly having a multiple orifice discharge arrangement is provided by means of an insert placed within the dispensing conduit of an aerosol actuator button whose inner surface cooperates with the outer surface of the insert to form multiple dispensing conduits. The separately structured actuator button and insert provide an arrangement obviating molding problems which would arise with a one-piece multiple orifice actuator.

3,767,126

SPREADING IMPLEMENTS

Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland

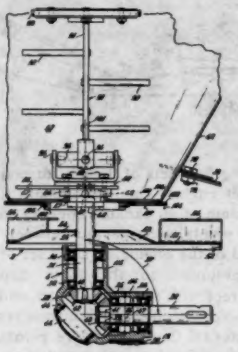
Filed Feb. 8, 1972, Ser. No. 224,543

Claims priority, application Netherlands, Feb. 8, 1971, 7101612

Int. Cl. A01c *3/06*

U.S. Cl. 239—661 **21 Claims**

A spreading implement has a container of two separable parts mounted on the upper vertical portion of a frame and a rotatable spreader with a transmission gear box supported on the lower horizontal frame portion. The gear box includes a cast housing with input and output shafts extending at angles to one another for connection to a prime mover's power take off and the spreader respectively. The output shaft extends upwardly through a relatively large opening in the container where it is detachably secured to an agitator. The angle



between the shafts is less than 180° and the housing has an access opening opposite the shafts for access to pinions releasably mounted on the shafts and removable bearings in the housing. The container has an opening in its bottom which can be more or less exposed to allow material to fall on an inwardly inclined face of the spreader. The agitator has an upper detachable part fitted on a lower part. Most of the parts of the implement can be detached and easily replaced.

3,767,127

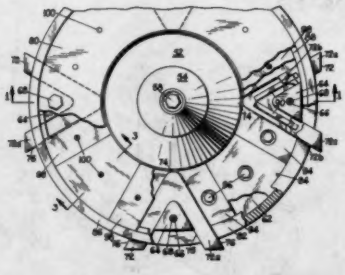
IMPACT CRUSHER

Bruce V. Wood, 6629 N.E. 82nd, Portland, Oreg.

Filed Dec. 20, 1971, Ser. No. 209,709

Int. Cl. B02c *9/00, 23/00*

U.S. Cl. 241—275 **5 Claims**



An impact crusher having a circular housing with an upper feed tube extending through a cover portion. The feed tube directs material to be reduced to an impeller unit. The impeller unit includes impeller shoes supported between impeller discs which rotate at high speed, and rocks fed to the shoes are impelled by the shoes against outwardly located breaker plates. The impeller shoes are V-shaped in horizontal cross section with the point or apex of the V being directed inwardly toward the center of the impeller unit. The V-shaped impeller shoes have impelling surfaces on two sides thereof for operation in either direction of rotation of the impelling unit.

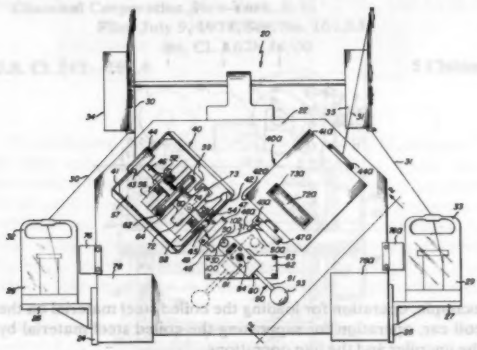
The shoes are held in place by posts and are constructed of at least two plate-like parts disposed flatwise in surface engagement facilitating individual replacement or shifting around to prolong the life of the shoes in their entirety. In one embodiment, the impeller shoes have hardened inserts on the impelling surfaces thereof to provide minimum replacement.

3,767,128

COIL WINDING MACHINE

Clement G. Hightower, 17 Chagnon Ln., Pelham, N.H.

Filed May 3, 1971, Ser. No. 139,534
Int. Cl. H02k *15/09*
U.S. Cl. 242—7.05 B 4 Claims



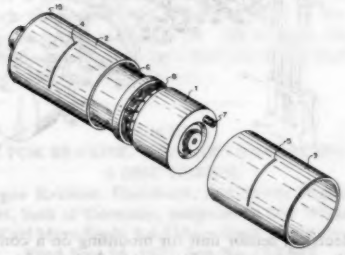
A coil winding machine comprising a plurality of winding heads disposed in spaced relationship with one another, a work holder having means for supporting a workpiece in operative relationship with the winding heads, and control means for oscillatingly moving the workpiece back and forth between selected ones of the winding heads during the winding operation.

3,767,129

MANDREL

Martin Sobel, Cumberland, Md., assignor to Celanese Corporation, New York, N.Y.

Filed Oct. 5, 1971, Ser. No. 186,637
Int. Cl. B65h *54/54*, *75/10*
U.S. Cl. 242—18 R 6 Claims



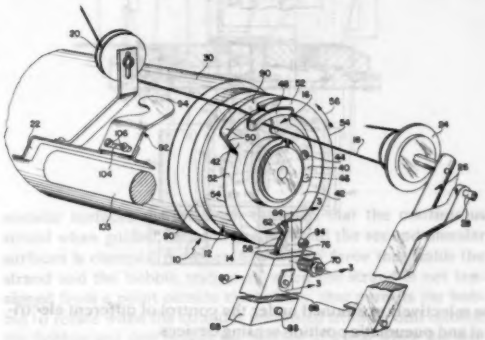
A yarn winding core and mandrel assembly wherein the mandrel is an expansible mandrel having at least one annular yarn snagging means. The core is a slotted core which when mounted on the mandrel will have the yarn receiving slot positioned over the annular yarn snagging means.

3,767,130

STRAND HANDLING

Thomas W. Perrino, Johnston, R.I., assignor to Leesona Corporation, Warwick, R.I.

Continuation of Ser. No. 5,556, Jan. 26, 1970, abandoned.
This application Oct. 1, 1971, Ser. No. 185,913
Int. Cl. B65h *54/02*, *54/34*
U.S. Cl. 242—18 PW 19 Claims



A rotary chuck of a winder receives a core on which a body of yarn is wound to form a package. Upon commencing winding of the yarn it is grasped by a clamp recessed into a free end head of the rotating chuck. Immediately after the yarn has been received by the clamp it retracts a cutter guard and the strand is severed outwardly of the clamp. The yarn is wound into a spiral groove in the head to provide a tailing end of yarn of predetermined length. At a predetermined and adjustable position of the yarn in the groove the yarn is released by an adjustable yarn guide cam and is received by a yarn traversing guide which then moves the yarn to and fro axially of the core during winding of the package. When the package is full the chuck and the yarn clamp are concurrently released, and the package is telescoped off of the chuck head as the tailing end is drawn out of the spiral groove and through the core where it remains until needed.

3,767,131

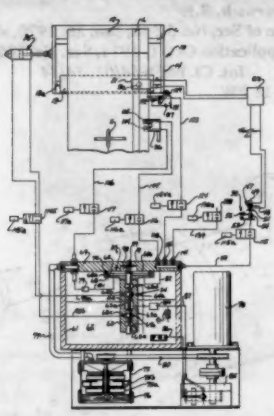
CONTROL APPARATUS FOR A WEB POSITIONING SYSTEM

Robert W. Ott, Jr., Rockford, Ill., assignor to Rockford Servo Corporation, Rockford, Ill.

Filed Sept. 20, 1971, Ser. No. 181,700
Int. Cl. B65h *25/26*
U.S. Cl. 242—57.1 9 Claims

An electro-pneumatic-hydraulic servo control apparatus for laterally moving a web engaging unit in a web positioning system, the servo control apparatus having an electrical web position sensing device for producing an electrical output signal correlative with the lateral deviation of the web from a desired path of web travel; an electro-pneumatic transducer including a pneumatic modulator valve having an electrical valve actuator responsive to the electrical output signal from the web position sensing apparatus for modulating a pneumatic pressure signal applied to a pneumatic operator and an hydraulic positioning means including an hydraulic positioning motor and an hydraulic servo valve operatively connected to the pneumatic operator for reversibly supplying fluid to the hydraulic positioning motor to move the web engaging unit in a direction and at a rate correlative with the deviation of the web from the desired path of web travel. Additional pneumatic-type position sensing devices, including a pneumatic web position sensing device and a unit position sensing device having a pneumatic signal control valve responsive to the position of the web engaging unit, are arranged for selective

operation in the control system to control the pressure applied to the pneumatic operator, whereby the web engaging unit can



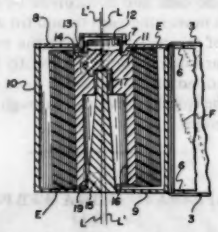
be selectively positioned under the control of different electrical and pneumatic position sensing devices.

3,767,132

DEVICE FOR WINDING A FILMSTRIP

Evan A. Edwards, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 6, 1970, Ser. No. 25,958
Int. Cl. G03b *23/02*
U.S. Cl. 242—71.2 **9 Claims**



A cartridge for winding a filmstrip includes a flangeless core rotatably supported at one portion only between a pair of stationary, parallel end walls. The longitudinal axis of the core assumes a tilted position relation to a normal to the walls upon rotation of the core to wind filmstrip thereon. The lateral edges of the outer convolutions of wound filmstrip engage diagonally opposed portions of the end walls to maintain the convolutions in accurate alignment between the walls. In one embodiment, the filmstrip is guided onto the unsupported portion of the core to engage only one end wall.

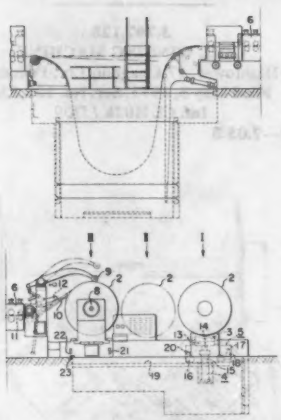
3,767,133

METHOD OF AUTO-LOADING OF COILED MATERIAL IN BLANKING LINE

Osamo Seo, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusha, Tokyo, Japan

Filed Sept. 8, 1971, Ser. No. 178,566
Claims priority, application Japan, Sept. 9, 1970, 45/78492
Int. Cl. B21c *47/18, 47/24*
U.S. Cl. 242—78.8 **4 Claims**

In a blanking line including a coil car, an uncoiler, a washing roll, a feed roll, a leveler and a blanking press, an auto-loading operation of a coiled steel material in the blanking line can be attained by carrying out automatically various kinds of operations which have been manually made heretofore, such as, for



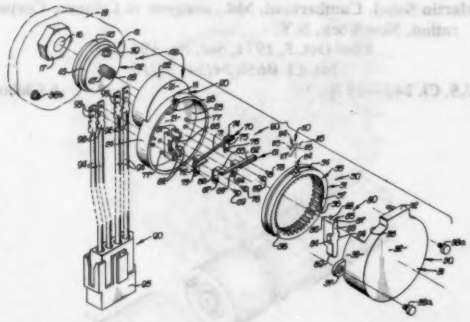
example, operation for loading the coiled steel material on the coil car, operation for supporting the coiled steel material by the uncoiler and the like operations.

3,767,134

ELECTRICAL SENSOR UNIT FOR A SAFETY BELT RETRACTOR

Gerald A. Morales, Simi, Calif., assignor to American Safety Equipment Corporation, Encino, Calif.

Filed June 30, 1971, Ser. No. 158,285
Int. Cl. A62b *35/00*
U.S. Cl. 242—107 SB **23 Claims**



The electrical sensor unit for mounting on a conventional safety belt retractor to provide an electrical signal to a "Fasten Safety Belts" light and to a "Safety Belts Fastened" light of a vehicle warning system includes a housing for location on the retractor over the nut on the axle of the belt reel; a hub adapter rotatably mounted in the housing coaxially of the belt reel, with a cavity on the inner end thereof mating with the reel axle nut, and with a gear on the outer end thereof; a ring gear cam rotatably mounted in the housing for rotation about

an axis parallel to and spaced from the reel axis to mesh with the hub gear, said ring gear cam having a curved ridge adjacent part of its circumference; an actuator slidably mounted in the housing with the lower end thereof engageable by the surface of the cam ridge to be slid thereby into a raised position; and normally open and normally closed contacts mounted in the housing, electrically connected to the lights, and engageable by the upper end of the actuator to be moved thereby to the other positions to signal, in response to the extension and retraction of the belt, whether or not the safety belt is buckled.

3,767,135

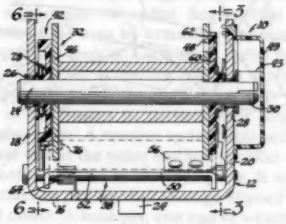
AUTOMATIC LOCKING SEAT BELT RETRACTOR

Frederick C. Booth, Birmingham, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed July 9, 1971, Ser. No. 161,031

Int. Cl. A62b *35/00*

U.S. Cl. 242—107.4 **5 Claims**



A retractor for a seat belt includes a reel spring loaded so as to normally retract a seat belt section wound thereon. Mechanism is provided for first allowing the belt section to be extended by the wearer to any desired length and to then lock the reel against further extension. This mechanism includes a cam and follower operative to disable the extension lock after the belt has been almost fully retracted so as to ready the unit for the next extension. The cam consists of a plate supported for rotation with the reel axis and having a groove formed thereon with an inner spiral section, an outer spiral section and an intermediate section connecting the two spirals and having a steeper radial projection than do the spiral sections. A cam follower has one end set in the groove and release of the extension lock is controlled by radial movement of the follower along the track, as it moves through the intermediate section of the groove.

The reel is locked against extension by a cam-controlled pawl which cooperates with a ratchet fixed to the reel. A clutch moved by the reel urges the cam to move the ratchet away from the pawl during reel retraction to eliminate the annoying click of the pawl on the reel.

3,767,136

DEVICE FOR BRAKING THE YARN UNWINDING FROM A DISC BOBBIN

Hans-Jurgen Krausse, Ebersbach, and Erwin Henning, Neugersdorf, both of Germany, assignors to Veb Wirkmaschinenbau Karl Marx Stadt, Karl Marx Stadt, Germany

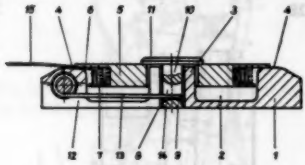
Filed June 16, 1971, Ser. No. 153,657

Claims priority, application Czechoslovakia, Apr. 7, 1971, 2484/71

Int. Cl. B65h *59/04*

U.S. Cl. 242—156 **3 Claims**

In combination, a bobbin having a cylindrical surface adapted for winding of a continuous strand thereon, the bobbin comprising means defining a first annular surface, the first annular surface lying in a plane normal to the axis of the cylindrical surface and being coaxial with the cylindrical surface, means for supporting the bobbin for rotation of the bobbin about the axis of the cylindrical surface, means defining a second annular surface, the second annular surface being coaxial with, parallel to and in closely spaced opposition to the first annular surface, means biasing the first and the second annular surfaces toward each other so that the continuous strand when guided between the first and the second annular surfaces is clamped therebetween with a force that holds the strand and the bobbin stationary when the strand is not tensioned from a point outside the bobbin, that permits the bobbin to rotate when the strand is tensioned from a point outside the bobbin and that brakes the bobbin to a halt when the tensioning is discontinued.



3,767,137

DRIVE DEVICE FOR TAPE RECORDERS

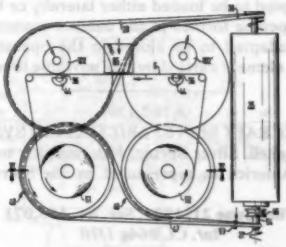
Oskar Hubert Richt, Socking, and Albert Liebl, Starnberg, both of Germany, assignors to Uher Werke Munchen, Munich, Germany

Filed Apr. 21, 1970, Ser. No. 30,509

Claims priority, application Germany, Apr. 25, 1969, P 19 21 300.4

Int. Cl. G11b *5/00*

U.S. Cl. 242—206 **11 Claims**



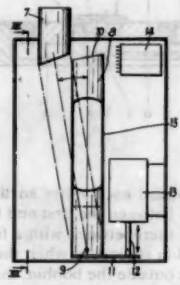
A drive device for a cartridge or cassette tape recorder comprises two oppositely rotating flywheels which each have a tape capstan, and furthermore two oppositely rotating drive wheels. The flywheels and the drive wheels are driven by the single motor via belts. For playback or recording of a track of the tape a pressing roller is pressed against one of the capstans so as to cause engagement and transport of the tape and a drive wheel is so displaced axially on a stationary pin that it raises an associated driven wheel from a stationary braking disc. For playback of the other track of the tape a further pressing roller is pressed against the other capstan for the purpose of engaging the tape and the other drive wheel is raised in order to raise its associated driven wheel from a further stationary braking wheel. The driven wheels are connected in a rotation transmitting manner with spool driving spigots which fit into driving openings in the tape spools arranged in the tape cassette.

3,767,138

WAITING APPARATUS FOR PNEUMATIC FOR PNEUMATIC DISPATCH SYSTEMS

Rene Jean Martin, Villeneuve-la-Garenne, France, assignor to Societe Francoise des Tiebes Pneumatiques, Levallois-Perret (Hauts-de-Seine), France

Filed Mar. 2, 1971, Ser. No. 120,104
Claims priority, application France, Apr. 17, 1970, 7013925
Int. Cl. B65g *51/28*
U.S. Cl. 243—28 **2 Claims**



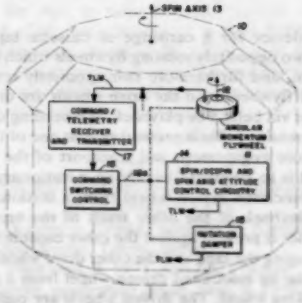
In a pneumatic tube dispatch system comprising a plurality of receiving and transmitting stations disposed along a main pneumatic line, an apparatus connected through one tube to said line is provided at each station with a substantially vertical movable tube section pivoted at its lower end and adapted to be set in two stable positions, namely a waiting and loading position in which it is adapted to receive a carrier for the message or other object to be transported along said line and an operative position in which it is connected to said one tube, electromagnetic means being provided for controlling the movement of said movable tube section from said waiting position to said operative position, as well as a rotary switch for selecting the address to which the carrier is to be delivered, a lighted push-button for registering this selection and a pilot lamp for warning the operator that the line is free. The movable tube section may be curved in case of larger tube diameters, and adapted to be loaded either laterally or from the top through an opening formed in the cabinet containing the apparatus and adapted to be closed in the operative position thereof by an element carried by said movable tube section.

3,767,139

SPACECRAFT SPIN STABILIZATION SYSTEM

Robert E. Fischell, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 21, 1971, Ser. No. 155,071
Int. Cl. B64g *1/10*
U.S. Cl. 244—1 SA **10 Claims**



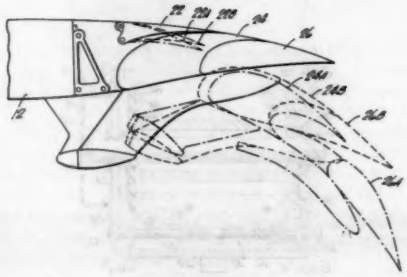
An angular momentum flywheel is mounted aboard a satellite or similar spacecraft to permit spin stabilization of the satellite without imposing undue limitations on the spin rate of the outer or main satellite body. The flywheel generates an angular momentum which can be utilized on slowly spinning satellites to increase the net angular momentum of the system and thus insure spin stabilization of the satellite or can be utilized on rapidly spinning satellites to decrease the net angular momentum and thus facilitate adjustments in the attitude of the satellite spin axis.

3,767,140

AIRPLANE FLAPS

Robert E. Johnson, Los Alamitos, Calif., assignor to McDonnel Douglas Corporation, Santa Monica, Calif.

Filed Nov. 3, 1971, Ser. No. 195,283
Int. Cl. B64c *3/50*
U.S. Cl. 244—42 DA **2 Claims**



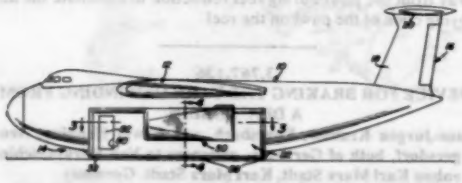
A flap and linkage system for a STOL (short takeoff and landing) aircraft having swept tapered wings. The flap linkage fairings are streamlined and the flaps move basically aft in the airstream direction and rotate in a hinge system which is approximately parallel to the rear wing spar. The length of movement of the flap is proportional to the length of the wing chord at the point of measurement, approximating a conic motion of the flap support points. Hydraulic actuation of the flap linkage also initiates spoiler movement.

3,767,141

AIR CUSHION VEHICLE

John Van Veldhuizen, Rt. 1, Estill Springs, Tenn.

Division of Ser. No. 873,436, Nov. 3, 1969, Pat. No. 3,652,038.
This application Jan. 26, 1972, Ser. No. 220,861
Int. Cl. B60v *3/08*
U.S. Cl. 244—100 R **8 Claims**



A vehicle defining a downwardly opening centrally disposed air cushion containing chamber bound along its opposite sides by upstanding longitudinally extending plenum chambers. Opposite side high bypass turbo engine pods are supported outwardly of the plenum chambers and structure is provided for variably bleeding the bypass air from the engine pods directly

into the plenum chambers which in turn include lower outlets spaced longitudinally therealong opening at least substantially directly into the air cushion containing chamber.

3,767,142

RELEASE MECHANISM FOR FLARE PARACHUTE

Roger A. Grosgebauer, Ogden, Utah, assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed Feb. 3, 1972, Ser. No. 223,159
Int. Cl. B64d 17/78
U.S. Cl. 244—147 6 Claims

A mechanism for releasing a drogue parachute from an aerial flare has a plurality of radial fingers that retain the mechanism in the flare case by extending beneath a shoulder or into an indentation therein. Each of the radial fingers is also confined under a radially extending tab on a central collar. A base plate, concentric with the collar, has pins that extend through slots in the fingers to prevent their rotation in the plane of the base plate. A tension spring attached at one end to the base plate and at the other end to the collar exerts force to rotate the collar relative to the base plate. It is kept under tension by a retaining pin inserted through aligned holes in the base plate and collar. A load pin, one end of which is attached to the drogue parachute, extends centrally through the collar and base plate. The opposite end of the load pin is equipped with a flange that attaches to the retaining pin. This flange is also equipped with a shear pin that extends through an ear that is perpendicular to the load plate. A compression spring surrounds the load pin and is confined between the inside end of a hollow guide, fixed to the load plate and the load pin flange. The shock produced by opening of the drogue parachute breaks the shear pin and allows the decelerating force produced by the drogue parachute to be supported by the base plate until the deceleration approaches a desired, terminal velocity. At that time, the compression spring operates to withdraw the retaining pin from the collar, allowing it to be rotated by the tension spring. This rotation moves the radial tabs of the collar away from the ends of the fingers, so that they are no longer confined thereby. The fingers then fall out of the flare, releasing the entire mechanism, together with the drogue parachute.

3,767,143

QUICK RELEASE HARNESS

John A. Gaylord, Greenbrae, Calif., assignor to H. Koch & Sons, Inc., Corte Madera, Calif.

Filed Oct. 8, 1971, Ser. No. 187,803
Int. Cl. B64d 17/30
U.S. Cl. 244—151 A 4 Claims

A parachute harness which has straps connecting to the canopy, side shoulder straps, a strap across the chest, and a pair of leg straps, severable connections between the shoulder straps which can be manually separated and also automatically separated by application of gas pressure; automatic gas operated release for the leg straps coupled with manually operable connections; manually operable as well as gas operated connection between parts of the chest strap; automatically and manually operable connecting and disconnecting device for oxygen supply to the face mask; gas connecting tubes to all the gas operated connectors as well as to the gas operated oxygen mask separator, and gas supply means located on the seat to be easily manipulable; a quick connector in the gas line from the gas supply means permits the pilot to rise from his seat without detaching the harness, the gas

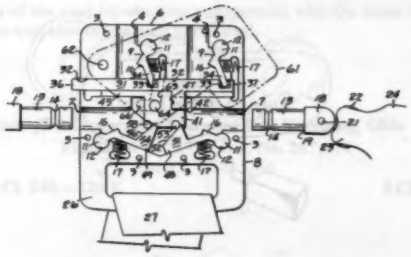
supply being normally closed until it is manually applied and is in the form of a cartridge pierced by manipulation.

3,767,144

SELECTIVE SINGLE POINT RELEASE FOR PARACHUTE HARNESS

John A. Gaylord, Greenbrae, Calif., assignor to H. Koch & Sons, Inc., Corte Madera, Calif.

Filed Oct. 20, 1971, Ser. No. 190,739
Int. Cl. B64d 17/32; A44b 21/00
U.S. Cl. 244—151 A 7 Claims



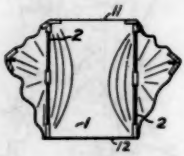
A casing supported on the crotch belt in convenient position accessible to all the straps of a harness has a plurality of sockets; the various straps of the harness have plugs insertable in the respective sockets; a spring pressed pawl projecting into each socket for engagement with a keeper notch in the adjacent plug; an individually shiftable actuating element engages certain of the pawls so that when it is shifted it withdraws the pawls from the selected plugs and releases them; another shiftable actuating element is capable of similarly withdrawing the other pawls from the respective plugs; an exterior manipulating device is provided for shifting the second mentioned actuating element; the connection between the first mentioned actuating element and the second mentioned actuating element is such that the first element can be shifted individually for releasing the selected plugs, but be shifted also by the second element when the second element is shifted by said exterior manipulating device.

3,767,145

KITES

Raymond Prunty Holland, Jr., 1702 W. Third St., Roswell, N. Mex.

Filed Oct. 29, 1971, Ser. No. 193,875
Int. Cl. B64c *31/06*
U.S. Cl. 244—153 R **5 Claims**



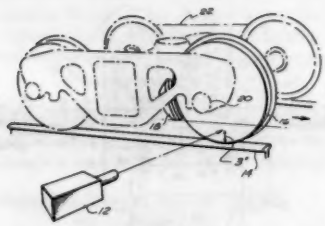
The wind-formed flexible kite is improved by the use of two longitudinal ribs supporting the flexible surface which are elastically bowed in flight. This structure produces a kite which billows open reliably under all flight conditions and which thereby permits wind formed kites to be designed in a greater variety of sizes and configurations with resulting increases of flight stability and efficiency.

3,767,146

RAILWAY SAFETY SYSTEM FOR DETECTING OVERHEATED BRAKES

Cornelius A. Gallagher, Syosset, N.Y., assignor to Servo Corporation of America, Hicksville, N.Y.

Filed June 22, 1972, Ser. No. 265,346
Int. Cl. B61l *3/02*; B61k *9/06*
U.S. Cl. 246—169 D **10 Claims**



A railway safety system is provided to detect defects on railroad rolling stock, such as sticking brakes, which are ultimately manifested by an abnormal temperature rise in the region of the railway car wheel rim. The system utilizes an infrared detector positioned along a section track and focused to scan the wheels of passing cars. Scanning is confined to an area of each wheel between the rail head and the bottom of the car brake shoes.

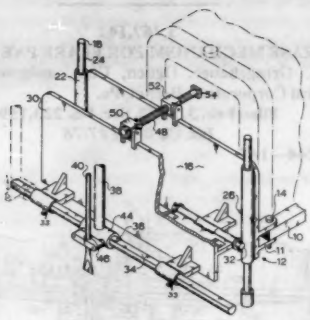
3,767,147

DRILLING RIG

Joseph Bernard Fero, 481 Leslie Ave., Thunder Bay, Ontario, Canada

Filed Oct. 21, 1971, Ser. No. 191,384
Int. Cl. E21c *5/00*, *11/02*
U.S. Cl. 248—16 **2 Claims**

A mounting member is attachable to a vehicle and carries through a rotationally controlable hinged connection a mounting bar for a plurality of drills.

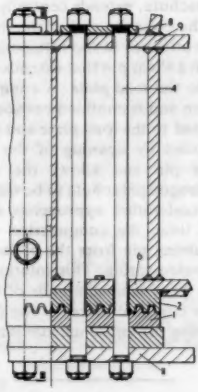


3,767,148

APPARATUS FOR SUPPORTING MACHINES

Edmund Porter Crowdy, Newcastle upon Tyne, England, assignor to Hawthorne Leslie (Engineers) Limited, Newcastle upon Tyne, England

Filed Sept. 20, 1971, Ser. No. 181,695
Int. Cl. F16m *13/00*
U.S. Cl. 248—25 **13 Claims**



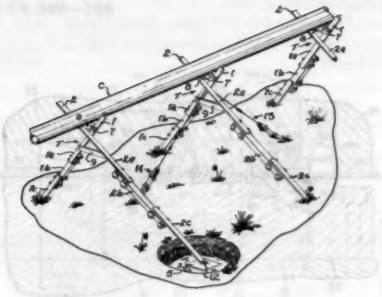
Apparatus for supporting a machine on a foundation to allow for expansion of the machine including a plurality of devices, each device comprising a first plate member having a contact face having a series of parallel corrugations and a hole, a second plate member having a contact face having a series of parallel corrugations adapted to fit the corrugations on the first plate member and a hole, a layer of resilient material located between the contact faces of the two plate members and a securement member adapted to extend through the hole in the first plate member in a tight fit and adapted to extend through the hole in the second plate member in a loose fit to allow the second plate member to move relative to the first plate member in the direction of the corrugations, this securement member being a bolt having a fixing means for securing the bolt to the machine, this fixing means being spaced from the portion of the bolt extending through the second plate member and the bolt is capable of elastic deformation to allow the machine to move relative to the fixed support.

3,767,149

SUPPORT TRESTLE FOR PERMAFROST AREAS

John E. Hill, South 4104 Conklin Rd., Greenacres, Wash.

Filed Mar. 17, 1972, Ser. No. 235,717
Int. Cl. F16l 3/00
U.S. Cl. 248—49 4 Claims



A trestle system is made to support fluid material conveyors in the air above the earthen overburden covering permanently frozen earth that is generally referred to as permafrost. The system comprises aligned trestles each embodying two limbs crossing each other at a point spaced well above the overburden surface, the limbs having their lower end portions embedded in the frozen earth and having portions above their crossing point connected by a tie beam upon which the conveyor is carried. The limbs extend outwardly and downwardly from their point of crossing at substantially right angles to each other and to the longitudinal axis of the conveyor.

Each limb comprises a horizontal footplate embedded in the frozen earth, a steel lower portion secured to the footplate and extending up through and above the overburden, a mid portion of wood, or equivalent nonconductor of heat, overlapped with and affixed to the lower portion and a steel upper portion overlapped with and affixed to the mid portion, the steel upper portion being affixed to the tie beam and to the other limb of the trestle.

Certain of the trestles embody braces to oppose leaning of the trestle lengthwise of the supported conveyor. These braces are each made up of a footplate embedded in the frozen earth and spaced endwise of the conveyor from the crossed limbs, steel lower brace portion affixed to the footplate and extending upwardly and toward the trestle, mid-limb portions of wood or equivalent heat insulating material overlapped with and affixed to the steel lower brace portion and a steel cable connecting the upper end of the mid limb portion to the crossed limbs.

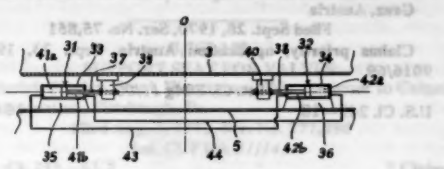
3,767,150

APPARATUS FOR MOUNTING LOW TEMPERATURE LIQUID STORAGE TANKS

Junichi Tabata, c/o 47 Edobori 1-chome, Nishi-ku, Osaka, Japan

Filed May 19, 1971, Ser. No. 144,821
Claims priority, application Japan, May 22, 1970, 45/44407; May 22, 1970, 45/44408
Int. Cl. G63b 25/08
U.S. Cl. 248—146 5 Claims

Apparatus for mounting a low temperature liquid storage tanks is operable to substantially prevent shifting movement of the whole tank while permitting the thermal expansion and contraction of the tank. The apparatus includes cylinder units installed between the tank supporting structure and the tank and connected in pairs by hydraulic circuits which are so arranged that quick shifting movement of the tank is prevented by hydraulic pressures in the circuits while the slow thermal



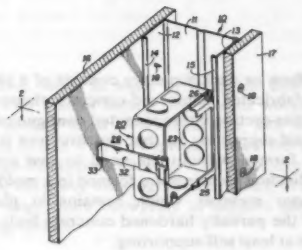
expanding and contracting movements of the tank are permitted by the flow of liquid in the circuits.

3,767,151

ELECTRIC WIRING BOX POSITIONER

Glendon E. Seal, 4554 E. 14th St., Tucson, Ariz., and Willis R. Arford, 8810 E. Shenandoah Pl., Tucson, Ariz.

Filed Nov. 12, 1971, Ser. No. 198,350
Int. Cl. H02g 3/12
U.S. Cl. 248—205 R 4 Claims



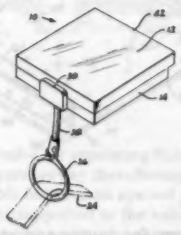
An electric wiring box positioner for use with metal studs attaches to the side of the box remote from a stud or other structural support member to which the box is attached and includes planar surface portions lying parallel with the vertical faces of the stud for abutting engagement with the inner faces of the wall sheets attached to the stud.

3,767,152

TABLETOP CLAMP

William J. Killinger, 4262 Lamont Dr., Kettering, Ohio

Filed June 28, 1972, Ser. No. 267,011
Int. Cl. A47f 5/00
U.S. Cl. 248—226 E 3 Claims

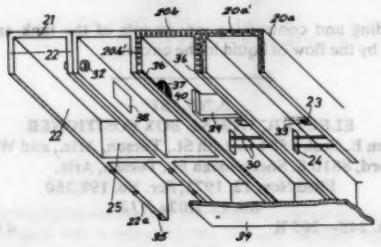


A one-piece clamp for suspending articles such as handbags from a tabletop or for clipping tablecloths on the tabletop. The clamp has plate-like legs relatively positioned to form an L-shaped bracket, the legs of which may be folded to a flat configuration. Clamping pressure is supplied by a tongue connected to one of the legs and pressing against the underside of the tabletop.

3,767,153
PLATFORM STRUCTURE

Hans Haller, and Erwin Wendl, both of Nibelungengasse 40, Graz, Austria

Filed Sept. 28, 1970, Ser. No. 75,851
Claims priority, application Austria, Sept. 23, 1969, A 9016/69
Int. Cl. E04g 11/00
U.S. Cl. 249—18 10 Claims

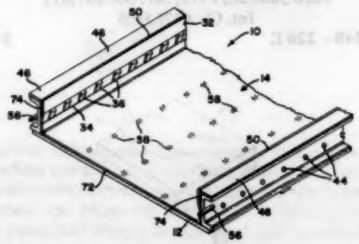


A roof platform or deck structure consists of a plurality of elongated prefabricated reinforced-concrete elements of inverted-U or cross-section interconnected contiguously and independently self-supporting so that the structure is self-supporting when formed without the need to cast concrete in place. The individual elements are formed in a mold having a removable inner member which remains in place after withdrawal of the partially hardened concrete body until the latter becomes at least self-supporting.

3,767,154
COMPOSITE FORM

Theodore William Shoe, Troy, Ohio, assignor to The Flexicore Co., Inc., Dayton, Ohio

Filed Mar. 16, 1971, Ser. No. 124,746
Int. Cl. B28b 7/22
U.S. Cl. 249—50 10 Claims

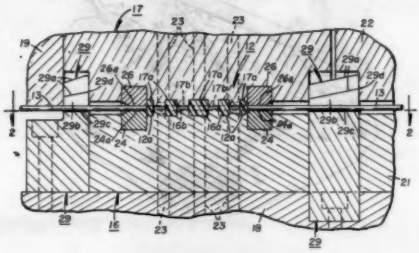


A composite form for casting concrete slabs combines a relatively thin, inner liner and a relatively thick base plate which are joined by continuous welds so that the two members act as a single unit in resisting bending and shear stresses. By using a relatively thin sheet for the inner liner the bends necessary to provide corners in the finished slab are formed without difficulty while the relatively thick base plate provides the additional strength necessary to keep deflection of the form when it is filled with concrete within acceptable limits.

3,767,155
APPARATUS FOR MOLDING LONGITUDINALLY SPACED BLOCK PORTIONS ABOUT LATERALLY SPACED PARALLEL INSERTS

Jiri J. Hovorka, Oklahoma City, Okla., assignor to Western Electric Company Inc., New York, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,328
Int. Cl. B22d 19/00
U.S. Cl. 249—96 6 Claims

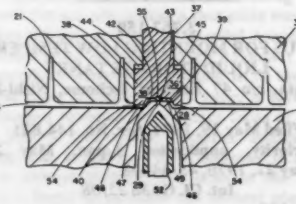


In forming a block member of a wire spring relay comb, spaced block portions are molded about parallel wires by gripping sectors of the wires on opposite sides thereof and introducing molding material into a first mold cavity for forming one of the block portions. Molding material then flows from the first mold cavity, through enlarged channels extending longitudinally between the gripped wires and parallel thereto, and into additional mold cavities for forming other block portions about the wires. The molding material in the channels subsequently forms reinforcing ribs bonded to opposed sectors of the wires and integrally connecting the molded block portions. For economy and ease in manufacture, molding dies of the apparatus are formed of pressed and sintered powdered metal of a special composition. Wire guides of special design help preclude the wires from becoming misaligned prior to a molding operation. The molded block member is symmetrical on either side of a plane containing the wires, to reduce its tendency to warp or crack during and subsequent to curing.

3,767,156
LOCK MOLD ASSEMBLY FOR A CONTAINER MOLD

Robert D. Sullivan, and Gottfried W. Jutte, both of Indianapolis, Ind., assignors to The Richardson Company, Des Plaines, Ill.

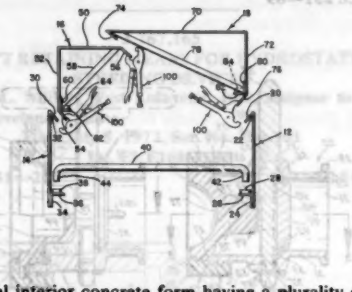
Filed May 17, 1971, Ser. No. 143,969
Int. Cl. B29c 1/60
U.S. Cl. 249—107 3 Claims



A mold assembly for preparing containers comprising a cavity member and a core member having depending core segments where the free ends of such core members are stabilized during molding by means of locking members within such core members and engagable with the cavity member so as to

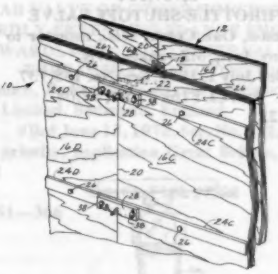
produce partitions and walls for the containers of uniform thickness and spacing.

3,767,157
SECTIONAL INTERIOR CONCRETE FORM
Joseph T. Davis, 8815 S.E. 59th, Mercer Island, Wash.
Filed May 3, 1971, Ser. No. 139,652
Int. Cl. B28b 7/30
U.S. Cl. 249—186 14 Claims



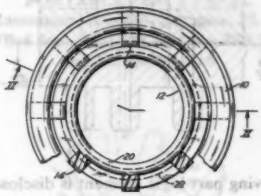
Sectional interior concrete form having a plurality of sections. Two lower side sections have an upper longitudinal flange and are vertical members. Two upper parts of the form are corner sections, one of which is a key section. Flanges on each of its longitudinal edges, coact with one of the lower side pieces, and the other corner section. The other corner section also has a lower longitudinal flange complementing the flange on the other side section. Cross bars are included for spacing and adding rigidity between two side sections and between the two corner sections. Angle brace means are provided in each of the corner sections for strength and rigidity. Clamping means hold the mating flange edges together.

3,767,158
CONCRETE FORM CONSTRUCTION
Glenn H. Mikus, St. Louis, Mo., assignor to The Flexicore Co., Inc., Dayton, Ohio
Filed Mar. 29, 1971, Ser. No. 128,951
Int. Cl. E04g 9/00
U.S. Cl. 249—192 6 Claims



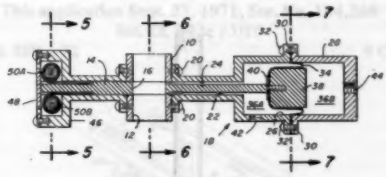
A concrete from of the type comprising abutting, coplanar panels connected together in edge-to-edge abutting relation to form inner and outer from walls for the pouring of concrete therebetween, the panels being detachably connected together by pivotal latch arms and pins on adjacent panel ends and plural tie rods extending between the inner and outer panels at the junctures of pairs of side-by-side panels. The latch arms and pins are carried on metal straps secured to the outside faces of the panels, the straps being recessed at the panel edges to lie flush with the inner faces of the panels where the tie rods are carried. The tie rods are circular in cross-section and are carried by the recessed strap to break off inside the concrete wall by a single twist at their ends.

3,767,159
SUPPORT SEAT FOR VALVES
Frederick Florian Treul, Wauwatosa, Wis., assignor to Calgon Corporation, Pittsburgh, Pa.
Filed Aug. 3, 1972, Ser. No. 277,490
Int. Cl. F16k 31/145
U.S. Cl. 251—61.2 7 Claims



A valve useful in water or hydraulic fluid systems is provided with a stem having two spaced working surfaces, the upper surface fixed to a diaphragm, and the lower surface adapted to seat with a peripheral raised valve seat in the base of a cage-like member having vertically extending guide members for the lower working surface, which, at a point above the guide range, flare outwardly to support and seat the upper working surface.

3,767,160
NULL-BALANCE REGULATOR VALVE
Robert F. McCollum, 6753 E. 32nd Pl., Tulsa, Okla.
Filed Jan. 20, 1971, Ser. No. 108,027
Int. Cl. F16j 3/00; F16k 31/145
U.S. Cl. 251—61 1 Claim



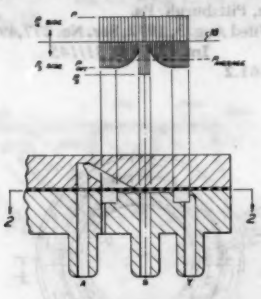
A null-balance valve for regulating fluid flow having a valve body with a fluid passageway therethrough, a closure member in the body movable between an opened position and a closed position, a cylinder supported to the valve body having a first fluid port adjacent one end and a second fluid port adjacent the other, a rolling diaphragm and piston in the cylinder intermediate the ports, the piston being attached to the closure member for positioning the closure member in response to the force applied to the piston, the force being the difference in pressure between the first and second ports times the working area of the piston, and constant tension means normally urging the closure member towards either the opened or closed position.

3,767,161

DIAPHRAGM VALVE LOGIC ELEMENT

Albert Blatter, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Aug. 16, 1971, Ser. No. 171,840
Int. Cl. G06d 1/02; F16k 31/145
U.S. Cl. 251—61.1 5 Claims



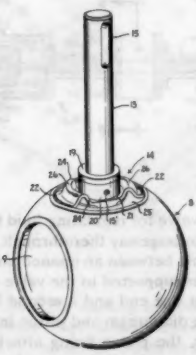
A fluidic moving part logic element is disclosed comprised of a diaphragm and housing defining a control pressure chamber on one side of the diaphragm and a supply pressure chamber on the other side with movement of the diaphragm in response to a pressure difference thereacross controlling communication of the supply pressure with an output passage. The supply fluid passes through a narrowed section defined in part by the diaphragm itself in reaching the output or a vent to create an average pressure on the supply pressure side of the diaphragm that is lower than the supply and the output passage pressure as a result of the Bernoulli effect to enable a control pressure of lower magnitude than the supply or output pressure to move the diaphragm against the supply pressure to control switching.

3,767,162

RESILIENT CONNECTION BETWEEN STEM AND PLUG OF PLUG VALVE

Sven Willy Olsson, Linkoping, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed Sept. 8, 1972, Ser. No. 287,572
Claims priority, application Sweden, Sept. 17, 1971, 11774/71
Int. Cl. F16k 5/14
U.S. Cl. 251—84 8 Claims



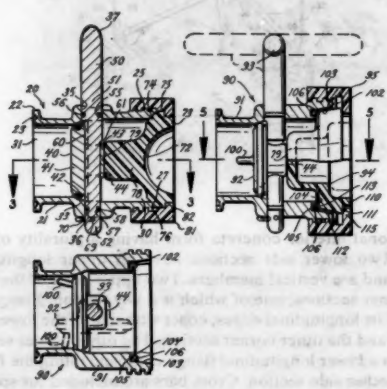
The plug of a plug valve is connected with its stem by means of a connector comprising a collarlike part snugly embracing and anchored to the inner end of the stem and a resilient platelike part extending laterally outwardly from the collar-like part, with outer edge portions secured to the plug. The platelike part flexes to enable the plug to swing relative to the stem, but constrains the plug to partake of all stem rotation.

3,767,163

SANITARY BUTTERFLY VALVE WITH LOCKING DUST CAP

Paul Mueller, Springfield, Mo., assignor to Paul Mueller, Company, Springfield, Mo.

Filed Apr. 14, 1971, Ser. No. 133,811
Int. Cl. F16k 35/02, 51/00, 1/22
U.S. Cl. 251—89 13 Claims



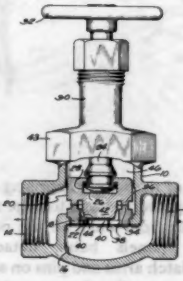
This invention relates to a sanitary butterfly valve for use primarily with liquid food applications which includes a valve body with seating means therein, a pivotally mounted seat disc which is made to move into and out of engagement with the seating means, and a combination locking and dust cap at the outlet port of the valve which protects against foreign particles entering the valve and locks the valve in its closed position. The valve is so designed to be assembled and dis-assembled in a matter of seconds.

3,767,164

THROTTLE-SHUTOFF VALVE

Bernie E. Robinson, Oak Creek, Wis., assignor to Milwaukee Valve Company, Inc.,, Milwaukee, Wis.

Filed July 1, 1971, Ser. No. 158,737
Int. Cl. F16k 25/04, 47/04
U.S. Cl. 251—122 4 Claims



The valve includes both a bevelled plug, which cooperates with a seat assembly to throttle flow, and an annular, flat seat-

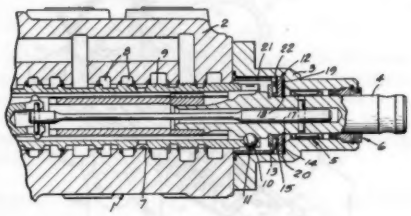
ing surface surrounding the plug, which seats against a corresponding annular, flat seating surface on the seat assembly when the valve is fully closed. The seating surfaces are made from a hardened material having a Brinell hardness greater than 500 so that the valve is capable of being used to control the flow of high-temperature, high-pressure fluids, such as steam. The hardness of one seating surface is greater than that of the other to minimize galling and the seating surfaces are positioned away from the direct eroding effect of the high velocity flow during throttling, thereby maximizing valve life. The valve and seat assembly can be easily removed for renewal of the flat seating surfaces by relapping or the like.

3,767,165

SHAFT RETAINING MEANS FOR HYDROSTATIC STEERING DEVICES

Laurence L. Miller, West Lafayette, Ind., assignor to TRW Inc., Cleveland, Ohio

Filed July 5, 1972, Ser. No. 269,161
Int. Cl. F16k *31/44*
U.S. Cl. 251—213 14 Claims



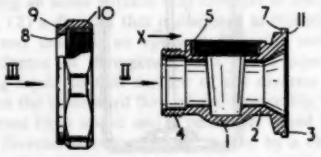
A structure for retaining the steering shaft of a hydrostatic steering device in the same operative axial position irrespective of the number of adjusting shims employed to operatively position the valve member actuated by the shaft, or the presence or absence of pressure in the hydraulic system of the device and which is so constructed that no restraining forces on the shaft tending to produce relatively high frictional forces and causing high steering torques are produced.

3,767,166

TUBULAR VALVE OR OTHER HOUSING HAVING AN OUTWARDLY-EXTENDING FLANGE ENGAGEABLE BY AN INWARDLY-FLANGED, INTERNALLY SCREW-THREADED CONNECTING RING

Arthur Dance, Bedworth, England, assignor to Townson & Coxson Limited, Bedworth, England

Filed June 13, 1972, Ser. No. 262,311
Claims priority, application Great Britain, June 29, 1971, 30,328/71
Int. Cl. F16k *27/00*
U.S. Cl. 251—366 1 Claim



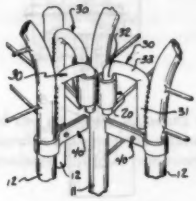
A tubular valve housing having a tubular end portion terminating in an outwardly-extending flange carrying an internally screw-threaded connecting ring having an internal annular shoulder at the inner end of the screw-thread and arranged to abut the flange at the inboard end thereof and to be retained by the flange from movement axially outwardly of the tubular end portion. The flange is of full circular shape because the tubular end portion is integral with the remainder of the housing and the lateral dimensions of the remainder of the housing are less than the internal diameter of the connecting ring to permit the connecting ring to be passed axially along the outside of at least the end portion of the housing until the shoulder on the ring has engaged the back of the flange.

3,767,167

PORTABLE FENCE PANEL

Howard C. Rasmussen, Box 345, Tampico, Ill.

Filed Sept. 15, 1972, Ser. No. 289,207
Int. Cl. E04h *17/16*
U.S. Cl. 256—26 9 Claims



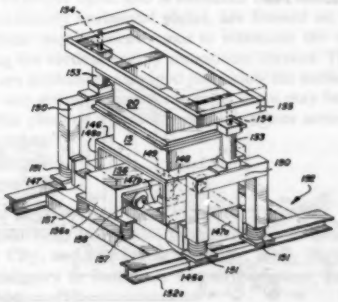
A portable fence panel is arranged for connection to identical panels for use as a pen or corral. Each panel has a generally rectangular frame which holds a wire barrier. A trio of tubes is mounted both at the top and bottom of one end post. An inverted U-shaped stud is mounted both at the top and bottom of the other end post for fitting into selected tubes. By providing the trio of tubes, a four-way fence corner can be easily constructed. A releasable locking mechanism is mounted below the stud to underlie the tubes and prevent disconnection.

3,767,168

MECHANICAL AGITATION APPARATUS

George T. Dupre, Palatine, and Thomas M. DeMarco, Chicago, both of Ill., assignor to National Foundry Equipment Company, Inc., Palatine, Ill.

Division of Ser. No. 38,166, May 18, 1970, Pat. No. 3,618,668.
This application Sept. 27, 1971, Ser. No. 184,288
Int. Cl. B22c *15/10*
U.S. Cl. 259—72 9 Claims



Method for continuous preparation of molds from mold flasks, matchplate mold patterns and mold forming material, wherein flasks are assembled with flask drag section atop pat-

tern and flask cope section, the drag section is filled with mold forming material, the entire flask is inverted, the cope section is filled, and the pattern is removed, inverted and made available for use with other flask sections. Multi-station apparatus for mass production according to the method. Jolt apparatus employing double shaft contra-rotating motors as a source of mechanical agitation for compacting mold forming material in flask.

3,767,169

AUTOMATIC ICE-CREAM MACHINE

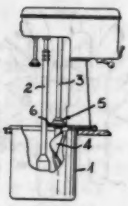
Poerio C. Carpigiani, Anzola Emilia, Bologna, Italy

Filed Jan. 18, 1972, Ser. No. 218,801

Claims priority, application Italy, Jan. 26, 1971, 12452 A/71

Int. Cl. B01f *9/10*

U.S. Cl. 259—85 6 Claims



The helical blade stirrer of an automatic ice-cream machine is as is customary located for rotation in the refrigerating can to be tangential thereto so as to scrape the side of the can. To accommodate deformation of points on the side of the can without permanent re-location of the helical blade the bearing for the end of the blade shaft which is located in the can is arranged to float radially in its housing and is maintained in the housing by resilient annular means such as rubber rings interposed between the housing and the periphery of the bearing.

3,767,170

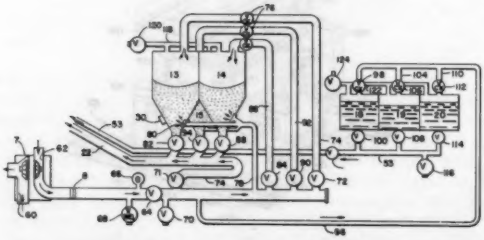
METHOD AND APPARATUS FOR MIXING AND TRANSPORTING CONCRETE

Harold L. Morgenstern, Missoula, Mont., assignor to The First National Bank of Missoula of Montana, Missoula, Mont.

Continuation-in-part of Ser. No. 162,947, July 15, 1971. This application Apr. 26, 1972, Ser. No. 247,840

Int. Cl. B60p *3/16*; B28c *5/38*, *5/42*

U.S. Cl. 259—148 13 Claims



A concrete mixing truck complying with maximum permissible highway legal load limitations, a trailer towed by the truck, and pneumatic conveyor means to transfer from the trailer to the truck separated, premeasured ingredients for one or more subsequently mixed concrete batches. The trailer may also separately store cement for admixture with the other ingredients of the first batch within the mixing truck when the hauling distance is such that the concrete mixing time specifications would be exceeded if all of the ingredients of the first batch were added to the truck at the concrete plant. When the separately stored ingredients in the trailer are pneumatically conveyed into the mixing truck, the entire void region in the mixer is completely filled with cement blown in under pressure so that the cement is more uniformly dispersed and in a much shorter time than customary with present in-field concrete mixing apparatus.

3,767,171

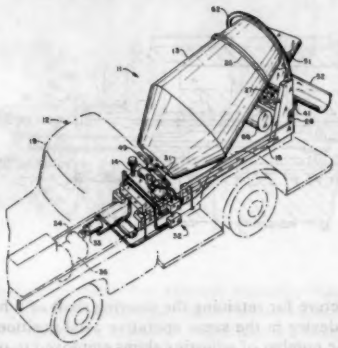
SMALL VOLUME TRANSIT-MIX

Paul E. Dummire, 12 Lavridge Road, Santa Cruz, Calif.

Filed July 9, 1971, Ser. No. 161,126

Int. Cl. B28c *5/18*

U.S. Cl. 259—177 A 3 Claims



Method and apparatus for the mixing and transport of small volumes of transmit-mix concrete. An improved mounting for a mobile concrete mixer is provided together with method and means for the loading of a transit mixer and the mixing of concrete.

3,767,172

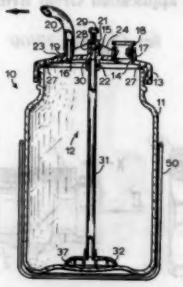
APPARATUS FOR PRODUCING A MIST OF A FLUID

Hadley B. Mills, Box 14336, Albuquerque, N. Mex.

Filed Mar. 15, 1971, Ser. No. 123,963

Int. Cl. F02m *25/02*

U.S. Cl. 261—18 A 3 Claims



Apparatus for producing a mist of a fluid for connection into a fuel inlet stream of an internal combustion engine, in which the fluid is contained within a bottle having a gas inlet and outlet in its gas-tight cover. The inlet gas is controllable in

amount and is released by an aerator beneath the surface of the contained fluid to produce a plurality of fine streams of small bubbles, which escape the surface of the fluid carrying with them a mist of the fluid entrained in the gas above the fluid. The gas and the entrained mist is exhausted through the output and injected into the fuel stream of the internal combustion engine.

3,767,173

CARBURETOR OF THE DIAPHRAGM TYPE HAVING A PRIMING DEVICE

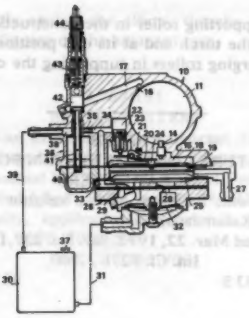
Keikichi Ishii, Odawara City, Japan, assignor to Mikuni Kogyo Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1970, Ser. No. 26,585

Claims priority, application Japan, Apr. 10, 1969, 44/32029 (utility model)

Int. Cl. F02m *17/04*

U.S. Cl. 261—36 A **4 Claims**



A carburetor of the diaphragm type comprising a passage branching off a fuel discharge passage communicating with a diaphragm chamber, a fuel well communicating with said passage, and a starting fuel passage connecting said fuel well with a mixing passage of the carburetor and having a starter valve mounted therein. The fuel well is adapted to receive a supply of fuel through said branched passage to store a predetermined quantity of fuel therein and the fuel stored in said fuel well is ejected into the mixing fuel passage through said starting fuel passage.

3,767,174

GAS SCRUBBER, ENTRAINMENT SEPARATOR AND COMBINATION THEREOF

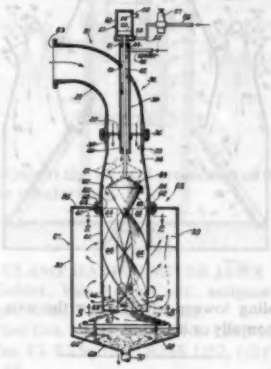
John M. Heeney, Chicago, Ill., assignor to Fuller Company, Catasauqua, Pa.

Division of Ser. No. 748,846, July 30, 1968, Pat. No. 3,597,901. This application Aug. 27, 1970, Ser. No. 67,547

Int. Cl. B01f *47/10*

U.S. Cl. 261—62 **8 Claims**

A gas scrubber for removing particles carried in suspension by gas is used with or without a specific entrainment separator. The scrubber has (1) a gas-conducting conduit with a portion having an inner surface that diverges in the direction of gas flow, (2) a diverter that is disposed in this portion of the conduit and that has an opposed diverging surface with a greater degree of divergence, and (3) a pipe that feeds scrubbing liquid to that surface of the diverter for flowing liquid into the downward flow of gas. Preferably, the diverter is supported from above and is resiliently urged upwardly so that the diverter is automatically moved by a change in the rate of gas flow. The scrubber provides an annular flow of gas that is changed to a helical downward flow by the specific entrainment separator, disposed below the diverter and having helically-extending elongated plates in a vertical conduit within a chamber. A frustoconical diverter is disposed below the bottom open end of that vertical conduit to change the direction of the gas leaving the vertical conduit. The elongated plates are radially disposed within the vertical conduit and extend in a helical manner about the longitudinal axis of that conduit. Another conduit communicates tangentially with a



sidewall opening of the chamber adjacent its top to exhaust the gas from the annulus between the chamber and the vertical conduit. Accumulated liquid is removed from the bottom of the chamber.

3,767,175

SURFACE AERATOR HAVING WAVE ATTENUATOR

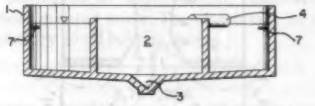
Herbert Auler, Aarbergen, Germany, assignor to Passavant-Werke, Germany

Filed Jan. 24, 1972, Ser. No. 220,176

Claims priority, application Germany, Feb. 3, 1971, P 21 04 985.4

Int. Cl. B01f *3/04, 7/16, 7/02*

U.S. Cl. 261—91 **11 Claims**



An apparatus for surface aerating liquids. A surface aerator arranged in a tank creates horizontally directed surface flow which forms into waves as the flow progresses through the tank and impinges upon and is reflected from the tank wall. Baffles, preferably horizontal plates, are formed on the tank walls at these impingement zones to attenuate the waves by eliminating the vertical energy component thereof. These baffle plates are preferably arranged just below the surface of the liquid. At any given impingement zone, there may be either a single baffle plate or a plurality of such plates arranged one above the other.

3,767,176

INJECTOR TYPE COOLING TOWER

John Engalitcheff, Jr., Gibson Island; Wilson E. Bradley, Jr., Ellicott City, and Edward N. Schinner, Silver Spring, all of Md., assignors to Baltimore Aircoil Company, Inc., Baltimore, Md.

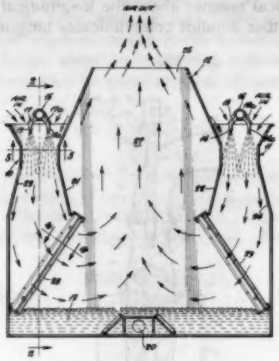
Filed Oct. 27, 1969, Ser. No. 869,798

Int. Cl. B01f *5/20*

U.S. Cl. 261—111 **1 Claim**

An injection type cooling tower, the basic module of which is made up of an injector and an exhaust stack which are made

in interfitting relationship with common walls and also injection type cooling towers which have the axis of fluid flow disposed horizontally or inverted.



3,767,177

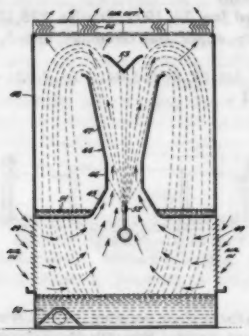
INJECTOR TYPE COOLING TOWER

John Engalitcheff, Jr., Gibson Island; Wislon E. Bradley, Jr., Ellicott City, and Edward N. Schinner, Silver Spring, all of Md., assignors to Baltimore Aircoil Company, Inc., Jessup, Md.

Division of Ser. No. 869,798, Oct. 27, 1969. This application Dec. 3, 1971, Ser. No. 204,754

Int. Cl. B01f *3/04*

U.S. Cl. 261—116 2 Claims



An injection type cooling tower, the basic module of which is made up of an injector and an exhaust stack which are made in interfitting relationship with common walls and also injection type cooling towers which have the axis of fluid flow disposed horizontally or inverted.

3,767,178

FLAME CUTTING APPARATUS FOR BARS

Alfred Pfeuffer, Neu-Isenburg; Helmut Weber, Steinbach/TS, and Hans Joachim Sach, Harheim, all of Germany, assignors to Messer-Griesheim GmbH, Hanauer Landsbrasse, Germany

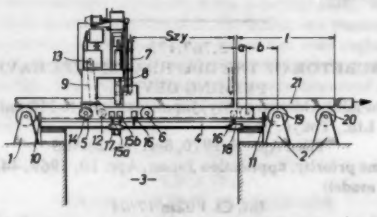
Continuation of Ser. No. 71,847, Sept. 14, 1970, abandoned. This application Nov. 29, 1972, Ser. No. 310,600

Claims priority, application Germany, Sept. 18, 1969, P 19 47 282.3

Int. Cl. B23k *7/10*; B22d *11/12*

U.S. Cl. 266—23 K 3 Claims

The flame cutting apparatus comprises a movable construction unit containing supporting rollers for the continuous bar to be cut off, a gas cutting torch, and clamping jaws for the bar. Stationary first and second discharging rollers are disposed in alignment with the path of movement of the bar.



The leading supporting roller in the construction unit is situated ahead of the torch and at its end position it cooperates with the discharging rollers in supporting the cut-off bar section.

3,767,179

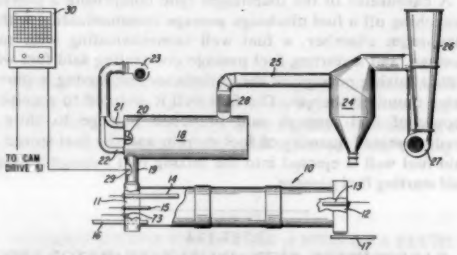
TEMPERATURE CONTROL SYSTEM FOR METAL SCRAP DRYERS

Charles R. Larson, Bellevue, Mich., assignor to Prab Conveyors, Inc., Kalamazoo, Mich.

Filed Mar. 22, 1972, Ser. No. 237,131

Int. Cl. F27b *17/00*

U.S. Cl. 266—33 S 3 Claims



Apparatus and method for temperature control within a rotating drum-type dryer treating metal scrap contaminated with combustible substances are disclosed. The apparatus comprises a bank of water-injection nozzles within the dryer which are individually controlled by cam-actuated metering valves. A signal generated by a temperature sensing means situated within an exhaust gas stream emanating from the dryer determines the number of nozzles which are simultaneously activated in order to provide the desired cooling.

3,767,180

COIL SPRING LOCK

Martin Kaiser, 66 Spencer Ave., Toronto 3, Ontario, Canada

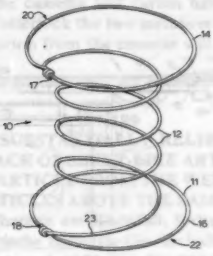
Filed June 17, 1971, Ser. No. 153,969

Int. Cl. F16f *3/04*

U.S. Cl. 267—91 6 Claims

An upholstery spring is disclosed, consisting of a length of wire helically coiled with the end convolutions closed to define two circles. The wire ends are wrapped about the adjacent turn at points where an obtuse elbow is located. The wire end crosses inwardly against the elbow and then wraps

around the wire immediately adjacent the bend, to trap one leg of the elbow between the wrapped end and the portion

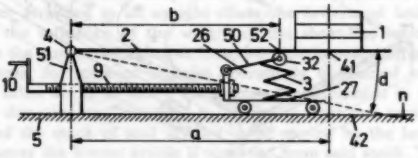


crossing inwardly against the elbow, thereby preventing the wire end from slipping on the adjacent turn.

3,767,181
SPRING SYSTEM

Gerrit Johan Van der Burgt, Hoflandstraat 35; Johannes T. Hart, Vuurdoornlaan 39, both of Pijnacker, and Jacob Schrier, Lependaal 188, Rotterdam, all of Netherlands

Filed July 7, 1971, Ser. No. 160,332
Claims priority, application Netherlands, July 7, 1970, 7009993; July 7, 1970, 7009994
Int. Cl. F16f *7/00*
U.S. Cl. 267—136 **15 Claims**



A spring system is proposed which comprises a lever mechanism with a first point of application of a load and a second point of application of a spring force, the lever mechanism bringing about an effective transmission ratio between the displacement of the first point and that of the second point, which ratio is adjustable so that the compression of the spring system and hence distance of the load from a reference plane can be maintained constant. In a preferred embodiment the system comprises a bell crank lever which cooperates with guide means to perform a translatory and a rotary movement in response to a displacement of said first point, the action of said guide means being adjustable.

3,767,182
ADJUSTABLE HEEL STAND FOR USE WITH WORKPIECE CLAMPS

Peter Badovick, Parma, Ohio, assignor to New Chance Machine & Tool Co., Cleveland, Ohio

Filed June 7, 1971, Ser. No. 150,456
Int. Cl. B23q *3/02*
U.S. Cl. 269—94 **3 Claims**

A vertically adjustable heel stand for use with clamping devices for holding workpieces. The stand has a cylindrical tubular base with a top plate that supports a vertical stem extending through an elongated opening in the plate. The stem has oppositely extending lands corresponding in shape and size to the opening and axially spaced apart a distance at least equal to the thickness of the plate. The stem can be turned relative to the opening so that the lands bear upon the top

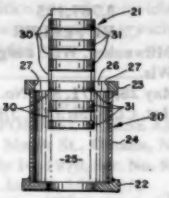
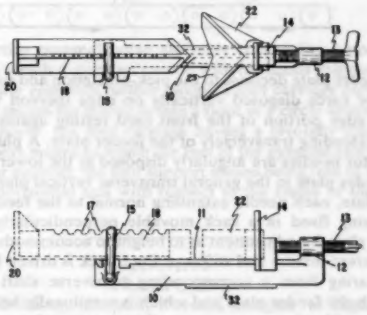


plate closely adjacent the vertical projection of the cylindrical side walls of the tubular base.

3,767,183
CLAMP HAVING MITER JAWS

Harold Van Gelder, Van Nuys, Calif., assignor to Universal Clamp Corporation, Van Nuys, Calif.

Filed Oct. 18, 1971, Ser. No. 189,922
Int. Cl. B23q *3/02*; B25b *1/02, 1/24*
U.S. Cl. 269—99 **4 Claims**

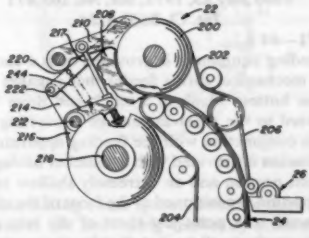


A clamp having as an improvement, removable devices adapted to hold mitered joints. The clamp may be removably fixed to a bench by novel holding means.

3,767,184
MACHINES FOR MAKING ENVELOPES

Joseph J. Dohnalik, Cook County, Ill., assignor to Garden City Envelope Company, Chicago, Ill.

Division of Ser. No. 791,722, Jan. 16, 1969, Pat. No. 3,635,128, which is a division of Ser. No. 591,995, Nov. 4, 1966, Pat. No. 3,450,009. This application Apr. 19, 1971, Ser. No. 135,315
Int. Cl. B65h *5/00*
U.S. Cl. 271—2 **6 Claims**



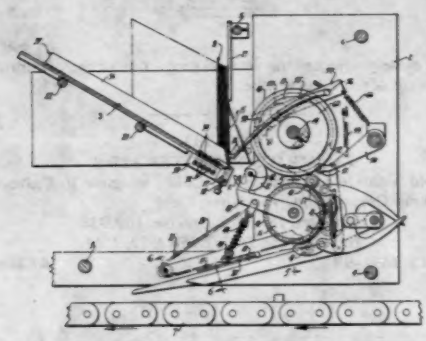
Apparatus for feeding blanks in an envelope forming machine includes a rotary drum and two sets of independently resiliently mounted rollers disposed in opposite echelon ar-

rangement for engaging the leading edges of a blank for forming a diagonal seam envelope.

3,767,185
CARD FEEDER

John R. Newsome, Milwaukee, Wis., assignor to W. A. Krueger Co., Brookfield, Wis.

Filed May 28, 1971, Ser. No. 148,034
Int. Cl. B65h *3/08, 5/08*
U.S. Cl. 271—11 **6 Claims**



A feeder plate declines to the pick-off station and supports a pack of cards disposed vertically on edge thereon with the upper edge portion of the front card resting against a stop plate extending transversely of the feeder plate. A plurality of separator needles are angularly disposed at the lower edge of the feeder plate in the general transverse vertical plane of the stop plate, each needle extending normal to the feeder plate and being fixed in a rack movable perpendicularly of the feeder plate for adjustment as to height to accommodate cards of different texture and stiffness. Each rack is driven by suitable gearing from a corresponding transverse shaft carried beneath the feeder plate and which is rotationally held in adjusted position by a set screw or other means at the outer edge of the plate.

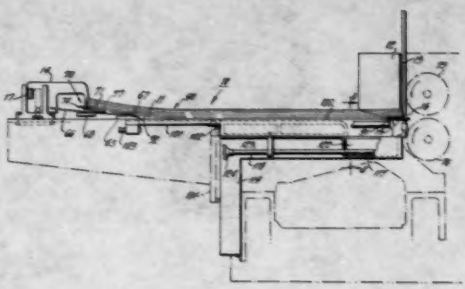
The gripping and transfer drums have a smooth 80 durometer polyurethane tread. The pull-out wheels are entirely separately mounted and driven, and spring pressed toward corresponding drums. The main drive shaft is made in sections rigidly coupled together to permit removal without dismantling the end housing. A counter force cam is provided on the main drive shaft to counteract the load forces on the drive cams.

3,767,186
SHEET FEEDER HAVING SUCTION ASSIST

Albert F. Shields, Forest Hills, N.Y., assignor to S&S Corrugated Paper Machinery Co., Inc., Brooklyn, N.Y.

Filed July 23, 1971, Ser. No. 165,671
Int. Cl. B65h *3/24*
U.S. Cl. 271—44 A **9 Claims**

Sheet feeding equipment is provided with a suction means to assist a mechanical spring feeder that engages the trailing edge of the bottom blank in a stack and drive the bottom blank forward to the receiving end of converting equipment operated in conjunction with the feeding apparatus. The suction assist means is provided with a chamber having a relatively deep front portion and an extremely shallow rear portion. The front portion is positioned at the front of the stack and extends rearward to a point just short of the rear edge of the shortest sheets that will be handled by the equipment. The rear portion is open at the rear thereof, so that there is always a substantial opening through which air is sucked into the shallow rear portion and then into the front portion by a suction blower connected to the front portion. The low volume of the rear portion results in high velocity flow therethrough, so that a low pressure region is established well back in the stack to

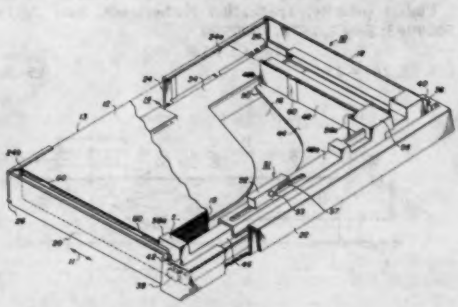


position the bottommost sheet for engagement by the mechanical feeder during its forward stroke.

3,767,187
ADJUSTABLE PAPER CASSETTE

Charles J. Mahler, and Donald W. Tates, both of Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 15, 1971, Ser. No. 208,138
Int. Cl. B65h *1/04*
U.S. Cl. 271—169 **4 Claims**

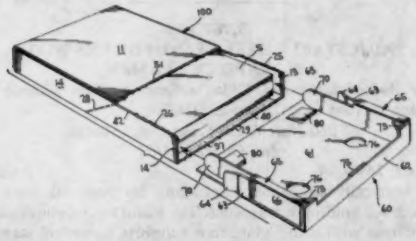


A container in which an adjustable guide member cooperates with a registration member to align the edge portions of a stack of sheet material supported therein.

3,767,188
PAPER FEEDING DEVICE

Charles W. Rosenberg, Jr., North Tonawanda; Arthur J. Byrne, Lancaster, and Marshall Mulvany, Williamsville, all of N.Y., assignors to F. N. Burt Company, Inc., Buffalo, N.Y.

Filed May 24, 1971, Ser. No. 146,306
Int. Cl. B65h *1/04*
U.S. Cl. 271—145 **6 Claims**



To provide a sheet feeding container device, a carton containing a pack of copy paper or similar sheet material is thrust

into a tray-like metal cassette which is adapted to be fitted to the intake of a copying machine or the like. The cassette is provided with two blades which project into the carton and embrace the pack to maintain its lateral dimensional stability during feeding. The cassette and carton have interengaging projections which interlock the two members so that attempts to withdraw the carton from the cassette will destroy the carton.

3,767,189

DEVICE FOR SUBSTANTIALLY RELIEVING IN AN UPRIGHT STACK OF SHEET-LIKE ARTICLES THE LOWERMOST ARTICLE FROM THE WEIGHT OF THE ARTICLES ABOVE THE SAME

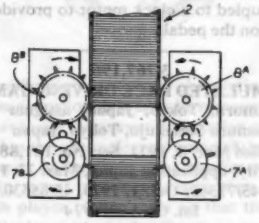
Georg Kopp, Neuhausen am Rheinfall, Switzerland, assignor to Sig Schweizerische Industrie-Gesellschaft

Filed Aug. 4, 1972, Ser. No. 277,919

Claims priority, application Switzerland, Aug. 16, 1971, 12015/71

Int. Cl. B65h *1/06*

U.S. Cl. 271—166 8 Claims



A device for substantially relieving in a stack of sheet-like articles arranged in an upright chute the lowermost article from the influence of the weight of the sheet-like articles above the same, comprising at least two superimposed support elements, for instance wheels, operatively connected with each other so as to move with their circumferences in the same direction and arranged to engage at least one upright side of the stack of said articles to be moved by the latter whenever the lowest article is removed from said stack. The upper support member is continuously in engagement with the adjacent portion of the stack and moves at a lower speed than the lower support element which engages its adjacent portion of the stack only periodically during short periods of time.

3,767,190

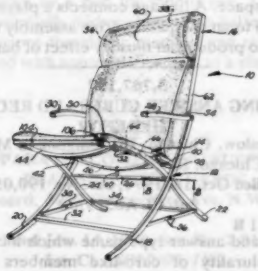
PIVOTING CHAIR WITH PIVOTALLY DISPLACEABLE SEAT AND BACK

William L. Biggerstaff, 3640 Sepulueda Suite 267, Los Angeles, Calif.

Filed Apr. 8, 1971, Ser. No. 132,456

Int. Cl. A63b *23/02*

U.S. Cl. 272—58 7 Claims



A device in the form of a chair having seat and back sections which pivot on a base in a toggle action. The seat and back sections are pivotally interconnected at their juncture and are pivotally connected to the base member at respective spaced pivot positions. The seat section can shift to slidably displace its pivot position, thereby providing freedom of toggle movement. Further embodiments include an extendable footrest and spring loaded arms.

3,767,191

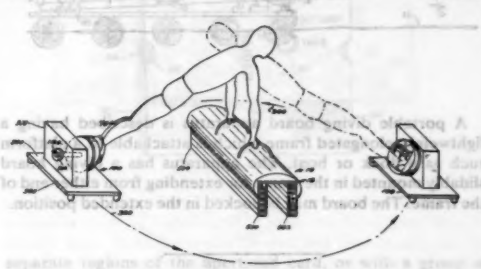
PRACTICE POMMEL HORSE ASSEMBLY

Bruce G. Riley, 8026 Maple St., Omaha, Nebr.

Filed July 16, 1970, Ser. No. 55,366

Int. Cl. A63b *5/12*

U.S. Cl. 272—64 6 Claims



A practice pommel horse assembly comprising a pommel horse, on which a gymnast can be with his hands gripping the handles, the assembly further having a foot carriage mounted on wheel means for rolling across a floor in a circle around the pommel horse, the foot carriage having a pivotally attached foot support means to which the feet of the gymnast can be attached for support, the foot support means being free to rotate about a horizontal axis with respect to the frame of the foot carriage.

3,767,192

TRAMPOLINE

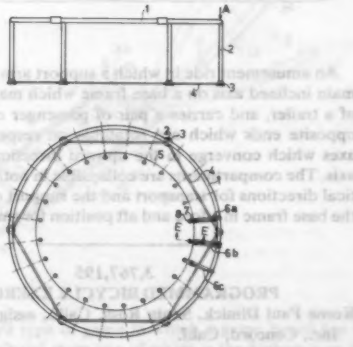
Nils E. Eriksson, Sibbhult, Sweden, assignor to Ingenjorsfirman Idema, Sibbhult, Sweden

Filed Mar. 3, 1971, Ser. No. 120,537

Claims priority, application Sweden, Mar. 6, 1970, 3050

Int. Cl. A63b *5/00*

U.S. Cl. 272—65 1 Claim



A trampoline having a mat spaced from the floor comprises a circular frame, the mat being resiliently attached to said frame centrally thereof. This frame is built up from sections each forming a rigid unit together with a socket for connecting an adjacent section thereto and a leg for supporting the frame, straight struts interconnecting the legs at the lower ends thereof to form a polygonal lower frame.

3,767,193

DIVING BOARD APPARATUS HAVING A DIVING BOARD TELESCOPICALLY MOUNTED IN A SUPPORT FRAME FOR COMPACT PORTABILITY

David L. Johnson, Pine Terrace Addition, Liberty Lake, Wash.

Filed June 23, 1971, Ser. No. 155,719
Int. Cl. A63b 5/10
U.S. Cl. 272—66 7 Claims

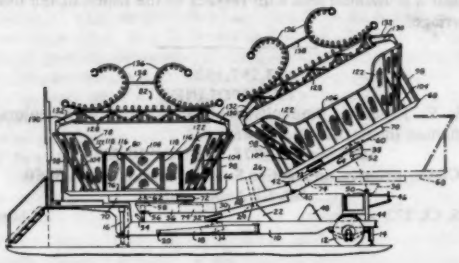
A portable diving board apparatus is described having a lightweight elongated frame which is attachable to a platform such as a dock or boat. The apparatus has a diving board slidably mounted in the frame for extending from either end of the frame. The board may be locked in the extended position.

3,767,194

PLURAL INCLINED AXES ROUNDABOUT

Gerald L. Barber, 364 Mona Ln., Findlay, Ohio

Filed Oct. 13, 1971, Ser. No. 188,899
Int. Cl. A63g 1/10
U.S. Cl. 272—51 12 Claims



An amusement ride in which a support arm is rotatable on a main inclined axis on a base frame which may be in the form of a trailer, and carries a pair of passenger compartments at opposite ends which are rotatable on respective secondary axes which converge in the upward direction with the main axis. The compartments are collapsible in both lateral and vertical directions for transport and the support arm is latched to the base frame in a fore and aft position for transport.

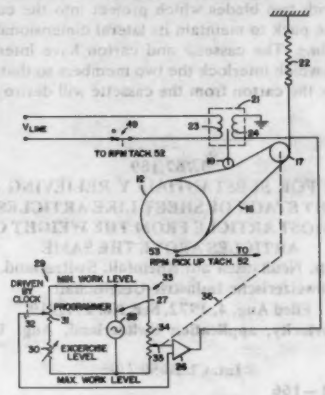
3,767,195

PROGRAMMED BICYCLE EXERCISER

Keene Paul Dimick, Santa Rosa, Calif., assignor to Lifecycle, Inc., Concord, Calif.

Filed Mar. 3, 1969, Ser. No. 803,820
Int. Cl. A63b 21/24
U.S. Cl. 272—73 6 Claims

Exercise apparatus in the form of a stationary bicycle in which the torque load on the pedals is adjusted through a predetermined cycle of operation by a servo motor applying a friction load to a flywheel driven by the pedals. A control loop includes a bridge circuit, coupled to the servo motor, sensitive to the amount of torque presently being applied by the servo motor and the control loop adjusts torque to a reference setting provided by a programming device. This device includes series connected resistors which are scanned by a moving contact coupled to a clock motor to provide for variation of torque load on the pedals.

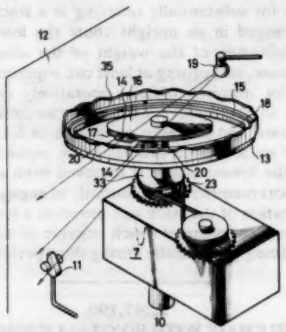


3,767,196

SIMULATED RACE DRIVING GAME

Masaya Kakamura, Tokyo, Japan, assignor to Kabushika Kaisha Nakamura Seisakujo, Tokyo, Japan

Filed Mar. 8, 1971, Ser. No. 121,888
Claims priority, application Japan, Mar. 23, 1970, 45/23896; July 18, 1970, 45/71362; Oct. 1, 1970, 45/85530.
Int. Cl. A63f 9/14
U.S. Cl. 273—1 E 8 Claims



In a game machine wherein the image of a road and the images of motor vehicles running on said road can be formed on a screen, there are provided at least one rotatable disc and at least one rotatable ring. The disc and the ring are so arranged that they form an annular space therebetween. Motor vehicle models carried by the disc and/or the ring are disposed in the annular space. A linkage connects a player operated accelerator pedal to an oscillating drive assembly to tilt the disc-ring assembly to produce an illusory effect of banking.

3,767,197

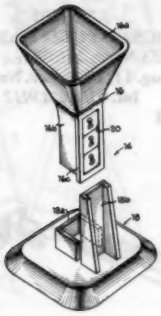
GAME USING ANSWER CUBES AND RECEPTACLE THEREFOR

Jeffrey D. Breslow, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Oct. 18, 1971, Ser. No. 190,054
Int. Cl. A63f 9/00
U.S. Cl. 273—1 R 6 Claims

A question and answer type game which includes, in combination, a plurality of card-like members each bearing question-type indicia, a plurality of cube-shaped answer designation members each having different answer indicia associated with the question indicia on one or more of the cards,

and a chute device for receiving the answer designation cubes and maintaining the cubes in the chronological order of their being deposited in the chute by the players of the game. The chute has a funnel portion for receiving the answer designation cubes and a base portion on which the funnel portion is readily removably mounted. The funnel portion has a window on one side thereof to permit visual observation of the answer designation cubes therein. The base portion has means to block the window when the funnel portion is mounted thereon



to thereby selectively prevent visual observation of the answer cubes. The funnel portion thus must be removed from the base portion in order to see the answer designation cubes contained therein as well as the chronological order of their having been deposited therein. In the preferred embodiment of the invention, a plurality or set of answer designation cubes are provided for each player of the game so that the players must select the particular cube which will answer questions or solve the problem presented by one or more of the question cards.

3,767,198

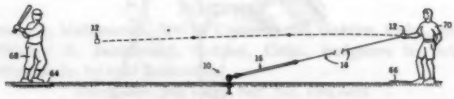
BATTING PRACTICE DEVICE AND METHOD

Ralph C. Boyer, Crystal Heights Rd., Crystal City, Mo.

Filed Apr. 9, 1971, Ser. No. 132,760

Int. Cl. A63b *69/40*

U.S. Cl. 273—26 E **2 Claims**



The present invention is a simplified structure for effectively providing batting practice, indoors or outdoors. To one end of a strong lightweight cord is secured a baseball and to the other end of the cord is secured a segment of elastic material. A clasp is connected to the other end of the elastic member and removably engages the upper end of a stake for outdoor use of the device or a bolt for indoor use. The assembly is anchored substantially midway between a batter and a pitcher. The latter tensions the elastic member and releases the ball, which is carried with appropriate speed to a plate at which the batter stands.

3,767,199

GAME APPARATUS COMPRISING SUPERPOSABLE PLAY SELECTING CARDS

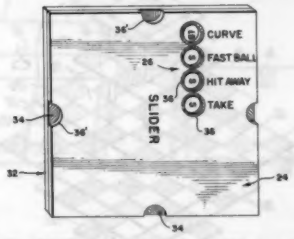
Richard G. Board, 3000 Connecticut Ave. N.W., Washington, D.C.

Filed Jan. 14, 1970, Ser. No. 2,817

Int. Cl. A63f *9/00, 1/02*

U.S. Cl. 273—93 C **10 Claims**

Offensive and defensive game cards of regular polygon configuration are superimposed to reveal play-determining symbols through apertures in one of the superimposed cards. A deck of apertured cards may be employed in the game, with each card having a uniquely located group of apertures to permit the selection of corresponding indicia from sets of indicia provided upon cards of another deck. Alternatively, a single apertured card, superimposable with indicia-bearing cards, may be provided with a single aperture at each of a plurality of



separate regions of the apertured card, or with a group of apertures at each such region, the apertures or groups of apertures being uniquely located to permit the display of corresponding indicia from the indicia-bearing cards. Superposition of offensive and defensive cards with different relative orientations provides a multiplicity of play-determining results.

3,767,200

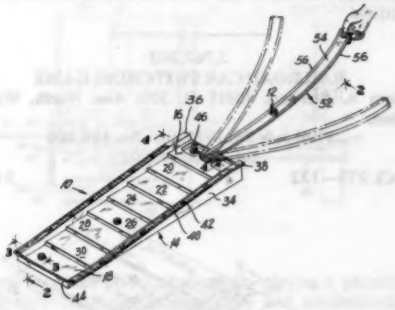
SHUFFLEBOARD TYPE OF GAME WITH STEPS AND SLIDING GAMEPIECES

Raymond J. Lohr, Erie, Pa., assignor to Louis Marx & Co., Inc., Stamford, Conn.

Filed June 19, 1972, Ser. No. 264,092

Int. Cl. A63f *3/00*

U.S. Cl. 273—126 **7 Claims**



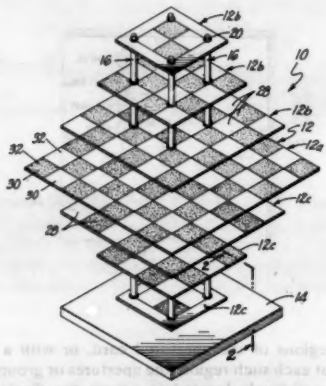
A shuffleboard type of game in which a game board has a series of flat surfaced steps one of which is the highest step at one end of the series and one of which is the lowest step at the opposite end of the series, with the plurality of steps having progressively lower elevations from the highest toward the lowest step. A propelling device in the form of a chute is connected to the highest step for propelling down the steps a gamepiece which frictionally slides along the steps, the steps being assigned different scores so that the score is determined by that step at which a gamepiece stops moving.

3,767,201

MULTI-LEVEL GAME BOARD STRUCTURE FOR THREE-DIMENSIONAL CHESS AND CHECKER GAMES

James W. Harper, 218 Avenue "H", Apt. B, Redondo Beach, Calif., and Gary L. Dietrich, 2011 Hacienda Blvd., Apt. 43, Hacienda Heights, Calif.

Filed Nov. 1, 1971, Ser. No. 194,351
Int. Cl. A63f 3/02
U.S. Cl. 273—131 AC 6 Claims



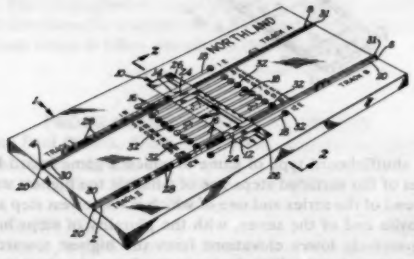
A multi-level game board structure for three-dimensional chess and checker games. The board structure has an odd number of game boards mounted one over the other in vertically spaced relation and each defining playing squares arranged in rank and file rows containing equal numbers of squares. Each game board above and below the center board has two less rank and file rows than the adjacent board in the direction of the center board. The boards are relatively oriented so that playing squares in any vertical line through the board structure alternate in color. The chess and checker game pieces are the same as used in conventional chess and checker games except that the chess pieces include additional pawns and the checker pieces include additional checkers. The chess and checker games are played according to essentially conventional chess and checker game rules except that the game pieces may be moved in both horizontal and vertical directions.

3,767,202

RAILROAD CAR SWITCHING GAME

William A. Sternad, 18415 D. 30½ Ave. North, Wayzata, Minn.

Filed July 26, 1971, Ser. No. 166,206
Int. Cl. A63f 9/08
U.S. Cl. 273—132 3 Claims



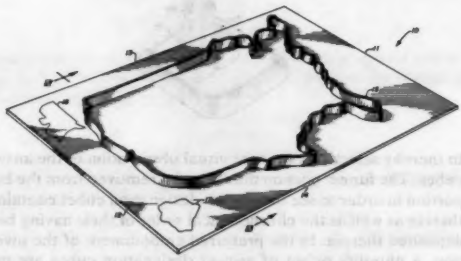
A railroad car switching game played on a board having a pair of incoming tracks and a pair of outgoing tracks formed thereon, these two pairs of tracks being separated at their inner ends by a bridge zone on which a pair of car receiving and conveying bridges are shiftably positioned. A plurality of classification track segments on opposite sides of the bridge zone serve to receive and store movable car members from the shiftable bridges in the process of shifting cars onto and off of the bridges to classify the two incoming trains and to make up a pair of outbound trains on the outgoing tracks. The objective of the game is to classify the two incoming trains and to make up a pair of outbound trains in a minimum number of moves of a bridge member.

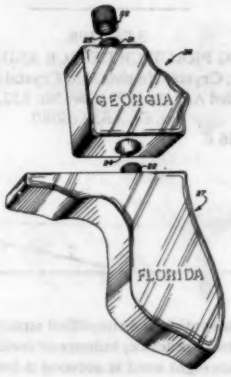
3,767,203

COMBINATION JIGSAW PUZZLE AND CONTAINER SET

Cecil E. Eaker, 11453 North 25th Ave., Phoenix, Ariz.

Filed Aug. 11, 1972, Ser. No. 280,071
Int. Cl. A63f 9/12
U.S. Cl. 273—157 R 4 Claims



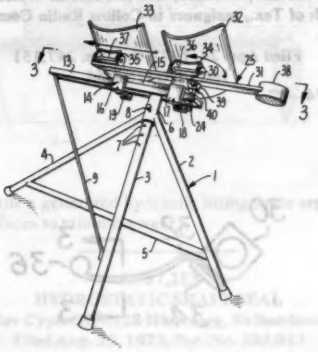


This specification discloses a combination jigsaw puzzle and container set comprising a rectangular board having a flange upstanding from the upper face thereof and which flange has a shape corresponding to the contour of the continental United States of America and the Great Lakes, with the exception of Alaska, together with a set of glass containers, each of which comprises flat top and bottom walls and a side wall having a configuration corresponding to the shape of one of the 48 states or a Great Lake. Outstanding from the side wall of each such container is a neck on which is fitted a removable closure. Most of these containers also are formed with a recess which enters into the side wall thereof and which recess is shaped and dimensioned to snugly receive the neck with its closure thereon of the container of an adjacent state or Great Lake. The board is sufficiently large to provide areas outside of the flange aforesaid on which containers which are replicas of Alaska and Hawaii may be placed.

3,767,204
GOLF SWING TRAINING DEVICE

Harry Ray Bryson, 1978 Lombard St., San Francisco, Calif.

Filed Sept. 21, 1972, Ser. No. 290,795
Int. Cl. A63b 69/36
U.S. Cl. 273—183 B 8 Claims

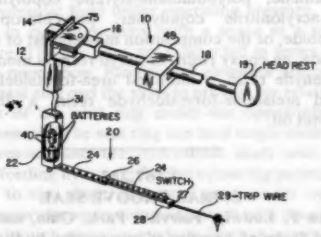


A device for teaching, learning or practicing a correct golf swing comprising: a first member fixedly mounted parallel to and behind a line across the golfer's hips; a sliding member mounted on the first member for sliding along the first member in the direction of the target in response to movement of the golfer's thighs in the downswing; a pivoting member mounted on the sliding member which includes a pair of thigh rests which receive the backs of the golfer's thighs and an adjustable rod which restrains it and the sliding member from sliding toward the target until the golfer's thighs achieve a predetermined amount of pivot in the backswing and thereafter releases it and the sliding member to slide along the first member in response to the lateral movement of the golfer's thighs in the downswing.

3,767,205
GOLFER'S HEAD MOVEMENT RESTRAINING DEVICE RENDERED NON-RESTRAINING AT BALL IMPACT POSITION

Ernest A. Maldonado, 300 N. Commercial, Golden, Colo., and Walter A. Jankowski, Golden, Colo., assignors to Said Maldonado, by said Jankowski

Filed Sept. 28, 1971, Ser. No. 184,480
Int. Cl. A63b 69/36
U.S. Cl. 273—190 R 5 Claims

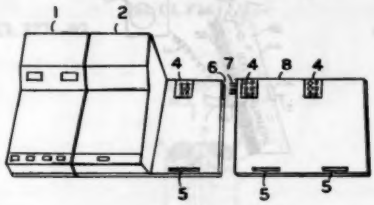


A vertically adjustable sport trainer restrains a golfer's head from movement until club-ball impact, sensed by an adjustable switch adjacent the ball, energizes a solenoid actuator disabling a set of engaged detents thereby permitting a head restraint mounting arm to be spring driven about a pivot pin horizontally away from a golfer.

3,767,206
CASSETTE TO CASSETTE DUPLICATING MEANS

George D. Rehklau, Los Altos Hills, and Cecil W. DeLong, Sunnyvale, both of Calif., assignors to Electro Sound Incorporated, Sunnyvale, Calif.

Filed Oct. 26, 1971, Ser. No. 192,397
Int. Cl. G11b 5/86
U.S. Cl. 243—3 4 Claims

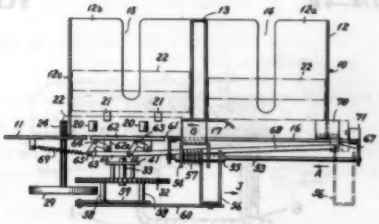


Cassette to cassette duplicating means are provided for reproducing cassette tape copies from a master cassette tape. A master cassette reproducer reproduces a program from a master tape. A modular interconnecting tray is adapted to mount one master reproducer and plurality of slave reproducers. The tray has a plurality of interconnected sockets to receive plugs in the reproducers. Additional trays may be plugged into the first tray to provide additional copies simultaneously.

3,767,207
AUTOMATIC AND CONTINUOUS TAPE CARTRIDGE PLAYER

Katsuhiko Okabe, Tokorozawa, Japan, assignor to Victor Company of Japan, Ltd., Kanagawa-ken, Japan

Filed Dec. 1, 1970, Ser. No. 94,030
Claims priority, application Japan, Dec. 2, 1969, 44/96227; Dec. 2, 1969, 44/96228; Dec. 2, 1969, 44/96229
Int. Cl. G11b 23/12
U.S. Cl. 274—4 F 7 Claims



A tape cartridge player sequentially playing a plurality of stacked tape cartridges automatically and continuously. A tape cartridge to be played is moved from a first stacking position to a second stacking position and thence to a predetermined playing position. A tape cartridge which has been played is shifted back to the second stacking position and elevated vertically while maintaining its horizontal state, and held at such a height as will not prevent a movement of a next tape cartridge to be played into the second stacking position. While playing multitrack tapes, the tape cartridge player automatically switches after finishing one track to the next track. To this end, the tape cartridge player employs a means automatically shifting the playing head vertically by a predetermined amount to engage the next magnetic track when one track is completely played.

3,767,208

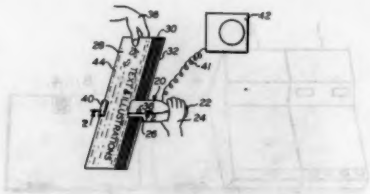
SOUND CARD AND SOUND APPARATUS FOR MULTI-CHANNEL USE

Maurice E. Chernowitz, 91 Payson Ave., New York, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,589

Int. Cl. G11b *5/80;* **G09b** *5/04*

U.S. Cl. 274—4 J **11 Claims**



This invention relates to audio apparatus in which a card having a magnetic sound track, or other type sound track, extends parallel to an edge of the card and simple manual operated means produce relative movement of the card and a sound head. One embodiment uses a power drive to obtain a more uniform rate of relative movement. The card is the record, and the edge of the card extends against a wall of a guideway to keep the sound track parallel to the direction of relative movement of the card with respect to the sound head. Extra length of reproduction is provided on the card, when desired, by having multi-channel tracks or continuous track with reverse runs and means for maintaining the sound head operative on the selected channel at various times during the operation of the apparatus.

3,767,209

ARRANGEMENT FOR THE PRECISE POSITIONING OF MAGNETIC HEADS

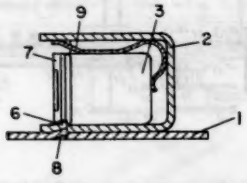
Eberhard Seehawer, Berlin, Germany, assignor to Firma Wolfgang Bogen GmbH, Berlin, Germany

Filed Feb. 10, 1971, Ser. No. 114,170

Claims priority, application Germany, Feb. 17, 1970, P 20 07 198.1

Int. Cl. G11b *21/26*

U.S. Cl. 274—4 R **5 Claims**



An apparatus for properly positioning a magnetic head in a screening housing so that the head maintains a relatively constant angular relation to a magnetic tape or the like which passes the head in engagement for reading, reproducing or erasing whereby a plurality of fitting markers are provided on the floor of the housing with which the head cooperates. In the embodiment below, the markers are tongues bent up from the screening housing floor and a spring in the housing exerts a force on the head urging it against the tongues. The base plate upon which the housing is mounted is also preferably provided with similar tongues, serving as fitting markers, so that each tongue of the base plate engages one of the tongues of the housing floor to further properly position the housing.

3,767,210

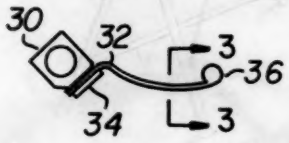
MAGNETIC TAPE CLEANER APPARATUS

Charlie C. Havens, Garland, and Herbert E. Welch, Richardson, both of Tex., assignors to Collins Radio Company, Dallas, Tex.

Filed Apr. 24, 1972, Ser. No. 247,151

Int. Cl. G11b *3/58*

U.S. Cl. 274—47 **1 Claim**



A fine mesh screening means used in a rubbing or sliding relationship to the magnetic oxide side of a magnetic tape to remove dust or other contamination particles from the magnetic tape for the purpose of reducing errors in electrical reading of the magnetic tape.

3,767,211

GASKETS

Philip Harold Amphlett, Lincoln, England, assignor to Jointine Products Company Limited, Lincoln, Lincolnshire, England

Filed Nov. 16, 1971, Ser. No. 199,202

Claims priority, application Great Britain, Nov. 25, 1970, 56,123/70

Int. Cl. F16j *15/14;* **B44d** *1/09*

U.S. Cl. 277—1 **5 Claims**

A gasket for effecting a liquid and/or a gas tight seal between two surfaces has at least one of two opposite surfaces coated with pressure-rupturable micro-capsules containing a liquid sealing composition. The capsules are ruptured by compression of the gasket between the two surfaces and the liquid sealing composition then hardens to form the seal. The sealing composition may consist of natural rubber, polyisoprene, polybutadiene, polybutadiene-styrene copolymer, polybutadiene-acrylonitrile copolymer, polychloroprene, or a polysulphide, or the composition may consist of a polyester, a polyamide, an epoxy resin, an alkyd resin, a modified phenol-formaldehyde resin, a modified urea-formaldehyde resin, a modified melamine-formaldehyde resin, a drying oil, or cashew nut oil.

3,767,212

SPIRAL GROOVE SEAL

Lawrence P. Ludwig, Fairview Park, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

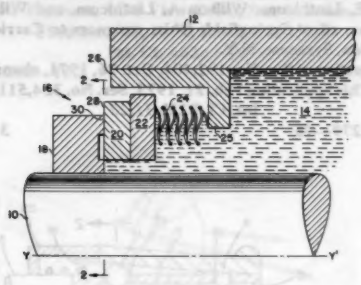
Continuation of Ser. No. 723,465, April 23, 1968, abandoned. This application Dec. 21, 1970, Ser. No. 99,901

Int. Cl. F16j *15/34*

U.S. Cl. 277—25 **5 Claims**

Mating flat surfaces inhibit leakage of a fluid around a stationary shaft. A spiral groove pattern produces a pumping ac-

tion toward the fluid when the shaft rotates which prevents leakage while a generated hydraulic lifting force separates the mating surfaces to minimize wear.



3,767,213

HYDROSTATIC SHAFT SEAL

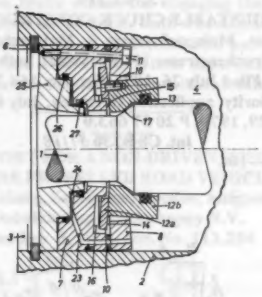
Ivan Jaroslav Cyphelly, 8128 Hinteregg, Switzerland

Filed Aug. 23, 1972, Ser. No. 283,043

Claims priority, application Switzerland, Dec. 7, 1971, 17836/71

Int. Cl. B65d *53/00*; F16j *15/16*

U.S. Cl. 277—30 **7 Claims**



A hydrostatic shaft seal for a rotatable shaft extending through an opening in a housing includes a seal ring substantially enclosed in a stationary seal ring casing consisting of seat plates. The seat plates are positioned in the housing opening with operating choke gaps formed between opposite axial end surfaces of the seal ring and the adjacent portions of the seat plates. One of these gaps is in communication with a space containing hydraulic fluid under operating pressure, and the other gap is in communication with a space at a relatively lower pressure. The two gaps are connected in series to open and close in opposition. Elastic seal elements are provided between the seal ring and the shaft to provide for relative axial displacement of the seal ring under the oppositely acting hydraulic pressures. The seal ring can be a single element or a two part element, and the hydrostatic shaft seal can be designed for feeding hydraulic fluid at operating pressure from the housing to the shaft, with the space under operating hydraulic pressure being in communication with the shaft and the housing through pressure medium lines. A cap is located within the opening in the housing and covers one of the sides of the seat plates which side extends transversely of the shaft. Elastic seal elements are provided between the cap and the juxtaposed surfaces of the seal plate and the combination of the elastic seals, the cap and the seal plate form at least one compensation space. A bore or passage through the shaft seal connects the compensation space with the hydraulic pressure medium so that the force provided by the pressure of the hydraulic pressure medium in the compensation space opposes the deformation forces provided by the hydraulic operating pressure.

3,767,214

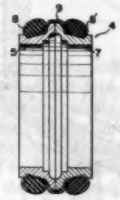
FREEZE-RESISTING SEAL RING

Toshio Kawamura, Hiratsuka-shi, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed June 17, 1971, Ser. No. 154,076

Int. Cl. F16j *15/34*

U.S. Cl. 277—92 **4 Claims**



A freeze-resisting seal ring adapted for use in a floating seal, distinguished by that said seal ring has a synthetic resin coating applied on its outer peripheral surface to form a water-repellent layer thereon.

3,767,215

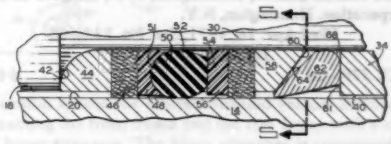
MULTI-RING HYDRAULIC SEAL FOR IRREGULAR BORE SURFACES

Bruce B. Brown, Latham, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 1, 1972, Ser. No. 285,943

Int. Cl. F16j *15/24*

U.S. Cl. 277—125 **10 Claims**

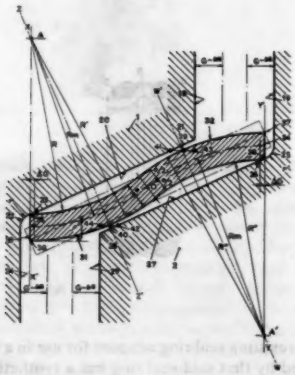


The sealing of irregular bore surfaces against the leakage of high pressure hydraulic fluid is accomplished by a multi-ring unit including an elastomer ring supported between a pair of teflon rings which also provide respective support for a rearward and a forward oversize leather ring, a steel cam ring adjacent the forward face of the forward leather ring, and an aluminum alloy wedge ring cooperating with the cam ring to provide an unsupported area therebetween. When the sealing unit is mechanically compressed after insertion thereof into the bore, the elastomer and the wedge rings are each partially extruded into circumferential obturating contact with the irregular bore surface to effect adequate sealing thereof until the sealing rings as well as the support rings are fully deformed into the final sealing configuration.

3,767,216
DEFORMABLE SEALING RING

Georges Lucien Henri Martin, Paris, France, assignor to Societe De Precision General (Societe Anonyme), Montreuil Sons Bois, France

Division of Ser. No. 719,935, April 9, 1968, Pat. No. 3,537,733. This application Aug. 6, 1970, Ser. No. 25,610
Claims priority, application France, Apr. 13, 1967, 67102549
Int. Cl. F16j 15/06
U.S. Cl. 277—213 4 Claims

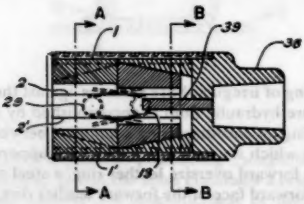


A pipe connection comprising two end-pieces the cooperating male and female surfaces of which include a central frusto-conical surface and two terminal radial surfaces. A deformable frusto-conical packing fitted and compressed between the two frusto-conical surfaces is bounded by inner and outer surfaces having an inflexion point in their middle so that the successive inwardly and outwardly convex sections engage the cooperating frusto-conical surfaces and the packing edges are extruded between the suitably shaped corresponding ends of the two frusto-conical surfaces.

3,767,217
VARIABLE CHUCK

Howard Martin Jensen, Huntington, N.Y., assignor to Ritmar Corporation, Huntington, N.Y.

Filed Apr. 16, 1971, Ser. No. 134,668
Int. Cl. B23b 31/12
U.S. Cl. 279—56 6 Claims

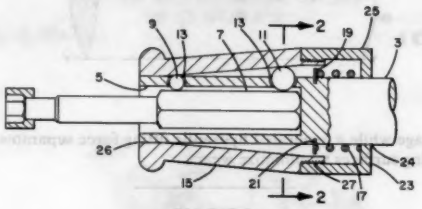


The invention provides a work chuck which by a single rotary motion may be adjusted to hold in work position any one of a range of different sized tools of a type having a shank portion and a drive portion by which it may be engaged by chuck jaws.

3,767,218
TOOL CHUCK

Harley E. Linthicum; William A. Linthicum, and William B. Bronne, all of Springfield, Ohio, assignors to Carrier Corporation, Syracuse, N.Y.

Continuation of Ser. No. 192,404, Oct. 26, 1971, abandoned. This application Feb. 21, 1973, Ser. No. 334,511
Int. Cl. B23b 31/22
U.S. Cl. 279—75 3 Claims

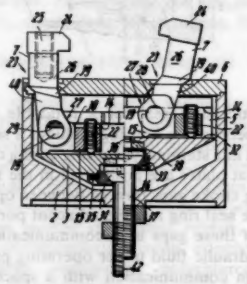


A ball chuck employing sets of circumferentially spaced balls for retaining a tool in the chuck in accurate alignment and providing a driving connection between the chuck and the tool.

3,767,219
ADJUSTABLE CHUCK CONSTRUCTION

David Fischer, Mainparkstrasse 6, Mainaschaff, and Rudolf Kohlert, Frankenstrasse 19, Stockstadt, both of Germany

Filed July 26, 1971, Ser. No. 164,798
Claims priority, application Germany, July 6, 1971, P 21 33 446.3; July 29, 1970, P 20 37 663.0
Int. Cl. B23b 31/18
U.S. Cl. 279—106 20 Claims



In an adjustable chuck arrangement a carrier is axially displaceable within a bell-shaped base and restraining elements are hinged to the carrier and extend outwardly through openings in a supporting plate attached to the base. When the carrier is displaced axially relative to the base, the restraining elements are also displaced in the axial direction. Further, the surfaces of the restraining elements, where they pass through the supporting plate, are shaped so that as they move axially they contact the surfaces of the openings in the supporting plate and pivot about their hinged connections. Clamping devices secure the restraining elements to the carrier and provide the hinged connections for the elements. The position of the clamping devices in the carrier can be reversed through 180° for adjusting the location of the restraining elements relative to the axis of the chuck.

3,767,220

FOOT WORN TWO-WHEELED VEHICLE

Robert A. Peterson, 1498 View Drive, San Leandro, Calif.

Filed Mar. 13, 1972, Ser. No. 233,903
Int. Cl. A63c 17/14
U.S. Cl. 280—11.2 6 Claims

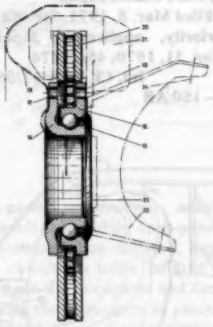
A two-wheeled vehicle adapted to be worn on a person's feet in the standup position so that they can be maneuvered like snow skis on a slope. Each vehicle is comprised of a frame supporting a pair of wheels at opposite ends and shaped so that the user's feet are located close to ground level. Toe and heel clamp means support the user's boot in the position that affords maximum stability and contol and movable calf support means pivotally connected to the heel clamp means includes a movable brake means for engaging the rear wheel when the user alters his position. Both wheels have relatively large low pressure tires with wide tread and provide a shock absorbing affect and at least one wheel has a one-way clutch hub to enable the user to climb slopes without rolling back.

3,767,221

WHEEL SUPPORT FOR A NON-DRIVEN WHEEL OF AN ENGINE PROPELLED ROAD VEHICLE

Sture Lennart Asberg, Savedalen, Sweden, assignor to SKF Industriele-En Ontwikkeling-Maatschappy N.V.

Filed Feb. 3, 1971, Ser. No. 112,284
Int. Cl. B62d 7/06
U.S. Cl. 280—96.1 4 Claims



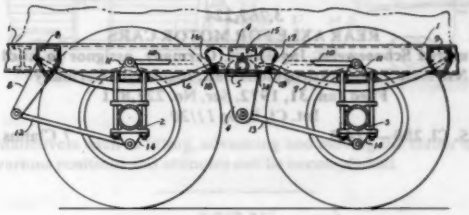
A preassembled wheel support unit for a nondriven wheel, having inner and outer annular members with confronting raceways for relative rotation and means for connecting one annular member to the vehicle and the other annular member to the wheel and brake disk. The pitch diameter of the raceways is at least twice the overall axial width of the annular members whereby forces resulting from functioning of the brake are acting at substantially the same diameter and close to forces from the wheel and reaction forces from the vehicle.

3,767,222

VEHICLE SUSPENSION STRUCTURE

Elwood H. Willetts, 102 S. Penataquit Ave., Bay Shore, N.Y.

Filed Nov. 9, 1971, Ser. No. 196,982
Int. Cl. B60g 5/06
U.S. Cl. 280—104.5 B 9 Claims



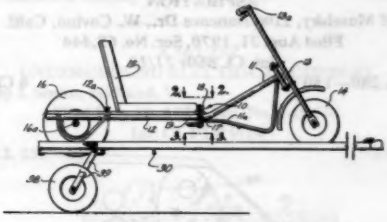
This invention includes an elastomerically resilient load equalizing means interposed between the adjacent ends of pairs of leaf springs on each of opposite sides of a multiple axle vehicle. The load equalizing means functions (1) to resiliently equalize a varying load between its opposing axles; and (2) to isolate the excitations of each adjacent spring end and its supporting axle from both the cross shaft of the frame (sprung mass), and from the opposing adjacent spring end and its respective supporting axle, through deflection of pressure resistant elastomers. The interconnection of said adjacent spring ends and said resilient equalizing means is restrained against disconnection at rebound.

3,767,223

VEHICLE SUSPENSION SYSTEM

Warren E. Bottenberg, Holton, Kans., assignor to B-M-B Company, Inc., Holton, Kans.

Filed Oct. 22, 1971, Ser. No. 191,600
Int. Cl. B62d 21/18
U.S. Cl. 280—106.5 R 4 Claims



Suspension system for a three wheeled vehicle includes interconnecting the front frame and the rear frame with a spring loaded hinge structure. The hinge structure is comprised of a pair of hinge plates, a hinge barrel and an interconnecting hinge pin. The front frame is connected to one of the hinge plates while the rear frame is connected to the other of the hinge plates. At least one cap screw extends through both hinge plates and has a compression spring circumscribing a substantial portion thereof on the hinge plate side that is opposite the screw head or cap. An adjustable nut and a washer combination affixes the compression spring between one of the hinge plates and the screw end so that the strength of the spring may be varied in accordance with the position of the hex lock nut. This construction permits the front and rear frame to articulate about the hinge pin under the spring of the strength of one or more of the compression springs and substantially absorbs much of the shock that may otherwise accompany the vehicle movement over rough irregular terrain.

Another embodiment of the invention includes spring loading the wheel forks of a trailer structure by providing a substantially upright stationary plate on the trailer frame and

spring loading a movable plate which is attached to the trailer wheel mounting fork. At least one screw extends through both plates with an adjustable compression spring being located on the plate side opposite the screw hex head. In this manner, the road shock is absorbed in the wheel suspension system for the trailer structure.

3,767,224

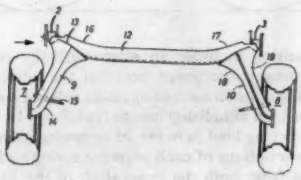
REAR AXLE FOR MOTOR CARS

Manfred Schneeweiss, Ingolstadt, Germany, assignor to Audi Nsu Auto Union Aktiengesellschaft, Ingolstadt, Germany

Filed Jan. 31, 1972, Ser. No. 221,871

Int. Cl. B60g *11/20*

U.S. Cl. 280—124 B **7 Claims**



A rear axle for motor cars has axle ends of both wheels which are fixed to separate rigid crank arms swingably mounted in the car body. The invention is particularly characterized in that the two crank arms are connected to the car body by a torsion axle between their axle ends and their bearings; each crank arm is mounted by a bearing in the car body receiving the rotary, bending and axial movements.

3,767,225

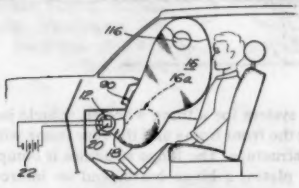
CONSTRUCTION FOR SAFETY AIR CUSHION SYSTEM COMPRISING DUAL BAGS, NOZZLE, AND AIR ASPIRATION

Bernard Mazelsky, 2106 Dancove Dr., W. Covina, Calif.

Filed Aug. 31, 1970, Ser. No. 68,444

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 AB **6 Claims**



The invention is an improvement in inflatable air cushion systems for use as devices to protect passengers in vehicles. Pressure is transferred from an elongated gas container through a nozzle to an inflatable bag or envelope for inflating it. Openings are formed for transferring gas from the container through the nozzle by means of an explosive charge. The improvements of the herein invention reside in that the dual bags are provided including a second positioned to prevent the motion of the passenger's legs which in turn prevents "submarining" of the occupant. The nozzle is dual to simultaneously inflate both bags. The large bag is provided with a flutter valve through which air is aspirated to assist in inflating the bag to thereby reduce the volume of pressurized air required for inflating.

3,767,226

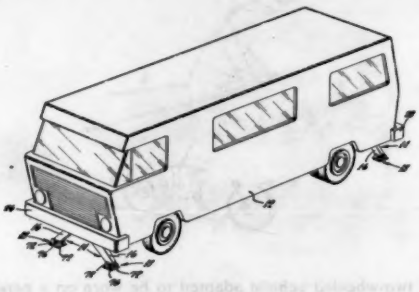
STABILIZER FOR VEHICLE

James M. Stephens, 3310 Julian, Long Beach, Calif.

Filed Mar. 24, 1972, Ser. No. 237,811

Int. Cl. B60s *9/02*

U.S. Cl. 280—150.5 **3 Claims**



A stabilizer for land vehicles, such as recreational motor homes, is provided for jacking the vehicle to a position at least partially lifting the weight of the vehicle off its supporting springs so that movement of persons within the vehicle will not result in rocking of the vehicle. The stabilizer comprises a pivotally supported pair of legs at the front and rear of the vehicle, each leg pivotally supporting at its free end a foot. Springs bias the legs into raised position and power operated means lower the legs into vehicle lifting position. The pivotal articulation between the legs and the feet includes slots to accommodate vehicle lifting and lowering movement of the legs without dragging the feet on the ground, and springs interconnecting the legs and the feet bias the feet into a position relative to the legs such that the foot is held flat against the leg with the outer ends of the slots drawn against the pivot.

3,767,227

SAFETY DEVICE ASSEMBLY FOR VEHICLE OCCUPANT

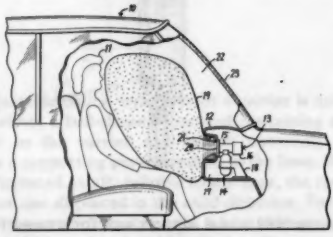
Hirosuke Furusho, Takarazuka-shi, Hyogo, and Shigetaka Fukui, Mino-shi, Osaka, both of Japan, assignors to Daihatsu Kogyo Co., Ltd., Osaka, Japan

Filed Mar. 8, 1971, Ser. No. 122,017

Claims priority, application Japan, Mar. 24, 1970, 45/25069; Mar. 31, 1970, 45/27274

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **8 Claims**



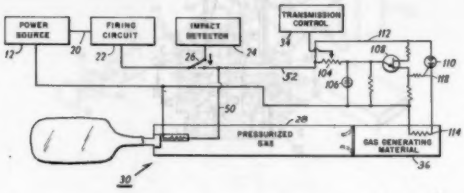
The inflation of an inflatable safety bag -- for the protection of an occupant of a vehicle -- is triggered by a sensitivity operable means associated with the conventional valve means, which sensitively operable means is responsive to sudden deceleration of the vehicle.

3,767,228

INFLATION TIME CONTROL FOR SAFETY DEVICE

Donald J. Lewis, Troy, Mich., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 27, 1971, Ser. No. 192,916
Int. Cl. B60r 21/08
U.S. Cl. 280—150 AB 19 Claims



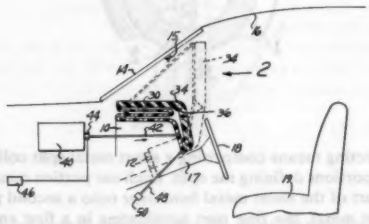
Apparatus for transmitting an electrical current from a power supply to a gas source during a time interval which varies in direct proportion to the ambient temperature within the portion of a vehicle in which the apparatus is disposed. A portion of the gas is released from the gas source upon receipt of the electrical pulse. Another portion of the gas is released from the gas source independently of the pulse. The released gas passes into a bag, which inflates during a time interval independent of the ambient temperature, thereby serving to protect occupants or other mobile objects within the vehicle.

3,767,229

INFLATABLE DASH-PANEL CONSTRUCTION

Robert H. Cain, 510 Garner Rd., Milford, Mich.

Filed Dec. 30, 1971, Ser. No. 214,220
Int. Cl. B60r 21/08
U.S. Cl. 280—150 AB 3 Claims



An inflatable dash-panel construction adapted to be mounted on a conventional automobile dash-panel and occupy a non-obstructing position when deflated, but which will respond to emergency conditions to be inflated and form a monoplanar screen between the occupants and the dash-panel without, however, pinning the occupants in place, to protect them against collision with the dash-panel windshield group.

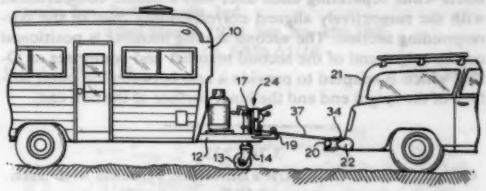
3,767,230

TRAILER POSITIONING AND MANEUVERING APPARATUS

Charles V. DeVries, 909 Serenity Dr., Plainfield, Ill.

Filed Dec. 8, 1971, Ser. No. 205,946
Int. Cl. B60d 1/18
U.S. Cl. 280—477 8 Claims

An apparatus mountable on a front hitch of a trailer and operative for selectively applying combinations of lateral and upward forces to the hitch in a plurality of directions wherein



maneuvers such as lifting, advancing and moving the trailer to various positions and attitudes can be accomplished.

3,767,231

EXTENDIBLE TOWING TONGUE

Tony W. Grosse-Rhode, c/o 1-M Products Inc., 2442 N. 84th St., Omaha, Nebr.

Filed Feb. 14, 1972, Ser. No. 225,775
Int. Cl. B60d 1/14
U.S. Cl. 280—482 8 Claims

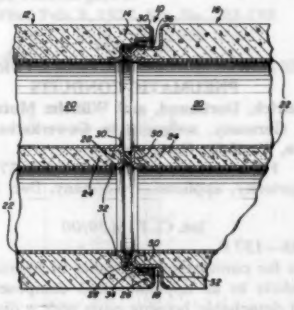
A draft tongue including first and second telescoped members extendible and retractable relative to each other and including first and second coacting structure limiting relative extension and retraction, respectively, of the members. Third coacting structure is carried by the members for releasably retaining the members in relative retracted positions. The first coacting structure for limiting relative extension of the members is enclosed entirely within the latter.

3,767,232

UNDERGROUND ELECTRICAL CONDUIT

Rodney I. Smith, Midland, Va.

Filed May 10, 1971, Ser. No. 141,751
Int. Cl. F16l 9/14
U.S. Cl. 285—55 5 Claims



A joint for a concrete conduit section comprising a first and second conduit section, each section having a bell end, a spigot end and a plurality of ducts therethrough. The spigot end of the second conduit section is adapted to be received in the bell end of the first conduit section with the ducts from one conduit section being in coaxial alignment with the ducts from the other conduit section when the sections are assembled in an end-to-end relationship. The joint has a plurality of

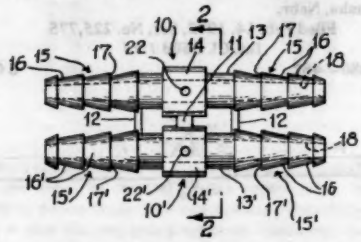
sealing members, with the first sealing member being positioned in the bell end and adapted to surround the plurality of ducts while separating each duct into a sealed compartment with the respectively aligned corresponding duct of the corresponding section. The second sealing member is positioned on the spigot end of the second member and comprises an O-ring which is adapted to provide a seal between the outer surface of the spigot end and the inner surface of the bell end.

3,767,233

COUPLING DEVICE FOR FLEXIBLE TUBING AND THE LIKE

George Robert Hodge, Cochranville, Pa., assignor to None Such Enterprises, Inc., New Castle, Del.

Filed Aug. 10, 1971, Ser. No. 170,449
Int. Cl. F16l 31/00
U.S. Cl. 285—239 **3 Claims**



A coupling device for joining adjacent free ends of lengths of flexible tubing, hose, and other cylindrical members is provided in the form of similar parts which are connected together and which are generally of semi-cylindrical contour tapering from the mid-section to a reduced diameter at the ends thereof. The device has surface irregularities along the tapered portions so that when the ends are inserted into cylindrical members within a predetermined size range, the irregular surfaces of the tapered portions provide firm gripping engagement with the inner surfaces of the cylindrical members. The similar parts can be molded from resilient plastic materials to provide integral connecting members forming living hinge means. The surface irregularities can suitably be a series of frustoconical sections of progressively increasing size from the ends toward the mid-sections of said similar parts.

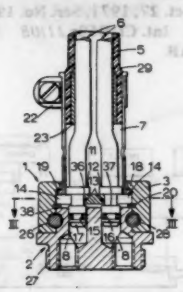
3,767,234

DEVICES FOR INTERCONNECTING HYDRAULIC OR PNEUMATIC CONDUITS

Walter Weirich, Dortmund, and Wilhelm Mutzke, Altlunen, both of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed Nov. 30, 1971, Ser. No. 203,272
Claims priority, application Germany, Dec. 3, 1970, P 20 59 576.0
Int. Cl. F16l 39/00
U.S. Cl. 285—137 R **1 Claim**

A device for connecting a plurality of hydraulic or pneumatic conduits to an appliance and composed of two interengaged detachable housing parts with a disc located for rotary movement within one of the parts. This one part receives a cylindrical sleeve which guides the conduits into the one part. The housing parts have complementary recesses which receive a clamping rod to secure the parts in a desired positional relationship. Each conduits has a hollow plug at its inner end which plug has a recess which is held in a radial slot in the disc. The slots in the disc are open at the periphery of the disc and the plugs are free to move along the slots during assembly of the device. The disc carries a locating pin which engages in the other of the housing parts so as to aid assembly and render the disc and the other part movable as a whole.



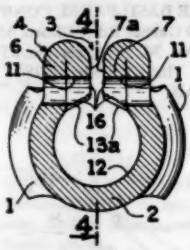
This other part has bores into which the plugs are sealably received and these bores extend to an outlet portion attachable to the appliance.

3,767,235

CONNECTING MEANS HAVING A SPLIT COLLAR

Alfred Pitner, Paris, France, assignor to Nadella, Rueil-Malmaison, France

Filed July 29, 1971, Ser. No. 167,273
Claims priority, application France, Aug. 5, 1970, 7028886
Int. Cl. B60b 27/06
U.S. Cl. 403—344 **4 Claims**



Connecting means comprising a sheet metal split collar and two ear portions defining the split. Each ear portion consists of a first part of the sheet metal bent over onto a second part of the sheet metal, the first part terminating in a first end face which for example prolongs the part-cylindrical inner face of the collar. An aperture is drilled in each ear portion and the first part of at least one ear portion has a notch in its end face. The purpose of the notch is to arrange that the burrs produced by drilling the corresponding aperture are outwardly offset from the end face of the first part.

3,767,236

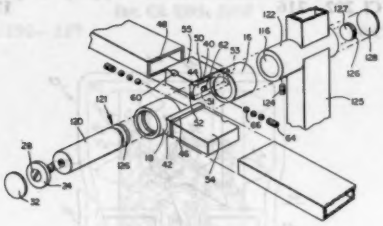
HINGED HANDRAIL FITTING

William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.

Filed Mar. 2, 1972, Ser. No. 231,099
Int. Cl. E04h 17/14; F16b 7/00
U.S. Cl. 403—73 **3 Claims**

A handrail fitting for connecting the ends of handrail members in tandem and providing for articulation of the members with respect to one another. A plurality of rotatably connected complementary configured members having integral rail terminals and fastening means adapted to internally grip hollow handrail sections.

Adjustable rotatably means are provided for moutning the fitting to a handrail post; said means and said fitting giving the



appearance of being pierced by said handrail and said post in assembled condition.

3,767,237

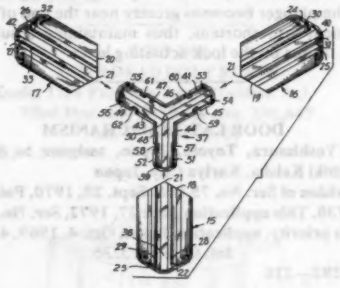
MITER FRAME CORNER CONSTRUCTION

Bernard Suchowski, New York, N.Y., assignor to Sternco Industries, Inc., Harrison, N.J.

Filed Aug. 25, 1971, Ser. No. 174,779

Int. Cl. F16b *7/04*

U.S. Cl. 403—171 **3 Claims**



A miter corner construction for multiple-panelled enclosures, such as aquarium tanks, comprising a frame corner formed of three mutually perpendicular members and a three-branched connector clip positioned within the corner. Each frame member comprises two longitudinal walls in right-angled relation, each of the walls having a longitudinal rib, the pair of ribs forming therebetween a cavity within which is disposed one of the clip branches. The lateral edge of each clip branch is notched, a portion of the rib extending into the adjacent notched portion, other portions of the rib being in overlying engagement with the clip branch, whereby the three frame members are held against longitudinal and transverse movement relative to each other and the clip. In the method of making the construction, the miter end portions of the three frame members are first slipped over the respective branches of the clip until the members are in mated engagement. Then, by a single swedging action, portions of the ribs are swedged into adjacent notched portions of the respective clip branches, and at the same time other selected portions of the ribs are swedged into overlapping engagement with the respective adjacent clip branches.

3,767,238

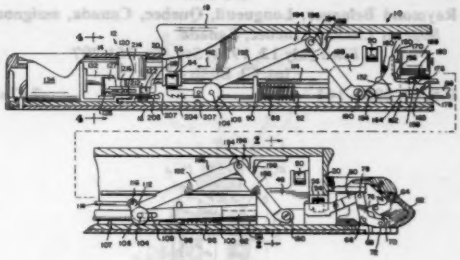
PUSH PLATE PANIC EXIT DEVICE

George Z. Zawadzki, Indianapolis, Ind., assignor to Von Duprin, Inc., Indianapolis, Ind.

Filed May 4, 1972, Ser. No. 250,185

Int. Cl. E05b *65/10*

U.S. Cl. 292—21 **35 Claims**



A panic exit latch and actuator assembly comprising an elongated, rod-like latch bolt actuator element rectilinearly movable along its axis and disposed in an elongated, horizontally extending housing traversing a door, a panic plate supported for movement outwardly and inwardly relative to the housing, and toggle mechanisms providing an operative connection between the panic plate and the actuator element to move the actuator element from its latch-projected position to its latch-retracted position in response to movement of the panic plate inwardly. A dogging system including a control member extending alongside the actuator element is provided, and connection mechanism is provided for connecting the latch bolt to the actuator element as well as to the control member, this mechanism permitting movement of the latch bolt inwardly without movement of the actuator element. A solenoid is provided for moving the control member to dog the latch bolt and a solenoid-operated lock is provided for locking the control member in its position effective to dog the latch bolt. The push plate is supported for rectilinear movement outwardly and inwardly by rollers journal mounted on the housing to roll on the push plate and rollers journal mounted on the push plate to roll on the housing.

3,767,239

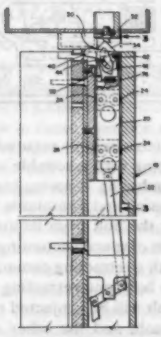
LATCH BOLT MECHANISM

William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.

Filed Feb. 3, 1972, Ser. No. 223,185

Int. Cl. E05c *5/00*; E05b *55/00*

U.S. Cl. 292—66 **6 Claims**



A latch mechanism is provided for use with a bolt cooperating with an electric strike in a door lock. The latch mechanism

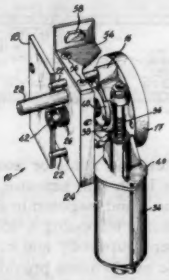
attached to the bolt comprises a latch, a cam member for camming a keeper to a noninterferring position with the latch, and a keeper for moving to an interferring position with the latch on closing and locking the door.

3,767,240

ELECTRICALLY OPERATED SAFETY LOCK FOR DOORS

Raymond Belanger, Longueuil, Quebec, Canada, assignor to Sogever Limitee, Quebec, Canada

Filed July 12, 1971, Ser. No. 161,797
Int. Cl. E05b *47/00*
U.S. Cl. 292—144 **7 Claims**



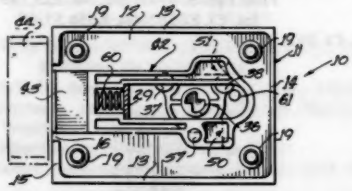
An electrically operated door lock comprising a housing adapted to be installed in the threshold of a door and a lock operating mechanism mounted in the housing. The lock operating mechanism includes a base member secured to the bottom of the housing, a top plate secured to the upper edge of the housing and two parallel rods extending between the top plate and the base member. A plate carrying a locking pin is slidably mounted on the two rods and has a screw threaded bore therein for receiving a screw threaded shaft which is rotatably mounted in the top plate and the base member. The shaft is rotated by a motor also mounted in the housing.

3,767,241

SPRING BOLT NIGHT LATCH

John L. Orr, Rockford, Ill., assignor to Keystone Consolidated Industries Inc., Peoria, Ill.

Filed Dec. 20, 1971, Ser. No. 209,568
Int. Cl. E05c *1/06*
U.S. Cl. 292—169.15 **10 Claims**



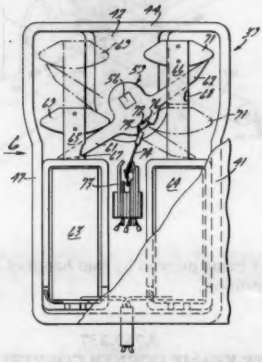
A spring bolt night latch assembly secured to the door of an enclosure and cooperating with a suitable strike mounted on the door frame and including a spring-biased reciprocable latch bolt in a latch housing and a rotatable knob cooperating with the bolt to retract the bolt from its biased latched position. The knob has a pair of spaced actuating projections, each of which cooperates with a retracting camming surface on one side or the other of the bolt; one retracting surface providing retraction where the bolt will be projected under spring force upon release of the knob, and the other retracting surface cooperating with its knob projection to retain the bolt in fully retracted position. A pivotally mounted pawl cooperates with the latch bolt in projected position to dead lock the bolt.

3,767,242

SOLENOID OPERATED DOOR LOCK

Norman G. Quantz, Algonac, Mich., assignor to Lectron Products Inc., Troy, Mich.

Filed Oct. 29, 1971, Ser. No. 193,871
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **17 Claims**



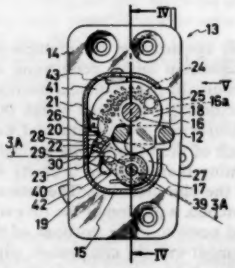
An actuator for the locking mechanism of an automotive door latch, having a housing secured directly to the latch frame. The actuator has a crank linked to the door lock and actuated by a pair of relatively slender solenoids. These solenoids have plungers which are connected to the crank by means having a variable moment arm. As each solenoid is energized, its plunger is connected to the crank during the first portion of its stroke by a relatively long moment arm. As the pull on the plunger becomes greater near the end of its stroke, the moment arm shortens, thus maintaining a substantially constant torque on the lock actuating lever.

3,767,243

DOOR LATCH MECHANISM

Noboru Yoshimura, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan

Division of Ser. No. 75,848, Sept. 28, 1970, Pat. No. 3,705,738. This application June 27, 1972, Ser. No. 266,548
Claims priority, application Japan, Oct. 4, 1969, 44/94742
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **5 Claims**



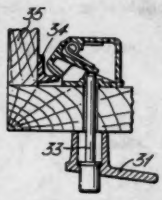
An automotive door latch mechanism comprising a rotatable latch bolt in the form of a fork and a bolt-supporting shaft and a striker pin for engagement by said latch bolt, said mechanism including a cancelling lever to release engagement between the striker pin and the latch bolt, an open lever for actuating the cancelling lever and a locking lever for preventing the cancelling lever from releasing the engagement between the striker pin and the latch bolt.

3,767,244

LOCKS

Graeme Raymond Plaw, Nunawading, Australia, assignor to The Stanley Works Pty. Ltd., Nunawading, Australia

Filed May 22, 1972, Ser. No. 255,527
Claims priority, application Australia, May 25, 1971, 4995
Int. Cl. E05c 3/08
U.S. Cl. 292—227 10 Claims



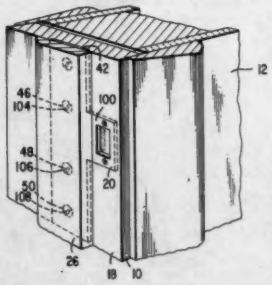
For use in the formation of a lock a continuous one-piece moulding in plastics material which comprises a first portion and two further portions contiguous with the first portion at a pair of hinge strips, the first portion defining a channel into which one of the further portions can be swung and the other further portion being swingable against the first portion to close the channel thereby to form a hollow lock body and to restrict swinging movement of said one further portion which latter portion is formed to then serve as a lock bolt head movable between a position in which it extends from an end of the hollow lock body and a retracted position in which it is swung inwardly of the body.

3,767,245

JAMB DEAD BOLT PLATE

John N. Keefe, 1324 Parkside Ave., Trenton, N.J.

Filed Mar. 21, 1972, Ser. No. 236,647
Int. Cl. E05b 15/02
U.S. Cl. 292—340 5 Claims



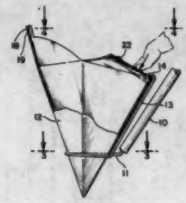
A DOOR JAMB AND BOLT STRIKE PLATE ARRANGEMENT is herein described including a bolt keeper strike plate having opposing side and end edges. An elongated anchor plate may be rigidly secured to one side edge of the strike plate and may be disposed so as to extend generally vertically when properly mounted in an operational posture. The door jamb may be routed out to form a recess for receiving this combined strike and anchor plate with the striking surface of the strike plate being flush with the surface of the door jamb. A door stop stripping may be mounted on the door jamb, over the elongated anchor plate.

3,767,246

SANITARY DISPOSAL APPARATUS

Robert Corelli, and Olga V. Corelli, both of 35 W. 74th St., New York, N.Y.

Filed Aug. 31, 1972, Ser. No. 285,419
Int. Cl. A47f 13/06
U.S. Cl. 294—19 R 5 Claims



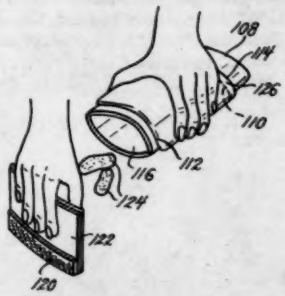
A sanitary dog litter disposal apparatus comprising an elongated handle, a wire frame disposed on the end of the handle, and a disposable container inserted in the frame at the end of the handle. The container is positioned under the hind quarters of an animal by means of the handle, and the container is sealed, removed from the frame and discarded in a suitable collection container to dispose of the dog litter.

3,767,247

PORTABLE COLLECTOR FOR DROPPINGS

Dallas G. Wetzler, 1575 Bluff Dr., Florissant, Mo.

Filed Mar. 13, 1972, Ser. No. 234,078
Int. Cl. A01k 29/00; A47l 13/52
U.S. Cl. 294—1 R 31 Claims

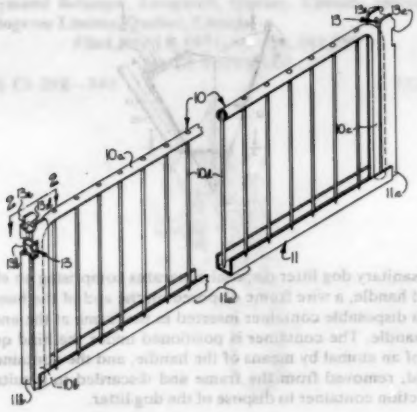


A readily-flexible, tear-resistant, bag-like receptacle has the open end thereof telescoped along the outer surface of that bag-like receptacle in a direction toward the closed end of that bag-like receptacle to cause a portion of that bag-like receptacle to lie in inverted condition over a further portion of that bag-like receptacle and thereby form an opening-defining fold. A manually-manipulable device is disposed at least partly inwardly of the inverted-condition portion of the bag-like receptacle, it is small enough to fit wholly within that bag-like receptacle, and it can be opened to accommodate a dropping. Thereafter, the free end of the bag-like receptacle can be telescoped along the outer surface of that bag-like receptacle in a direction away from the closed end of that bag-like receptacle and beyond the position occupied by the opening-defining fold to dispose the previously-exposed surface of the inverted-condition portion of that bag-like receptacle wholly at the interior of that bag-like receptacle.

3,767,248
RACK FOR SUPPORTING TOBACCO LEAVES FOR CURING

Frank Leigh Horne, Charlotte, N.C., assignor to Gas-Fired Products, Inc., Charlotte, N.C.

Filed May 31, 1972, Ser. No. 258,390
Int. Cl. A24b *1/06*
U.S. Cl. 294—5.5 4 Claims

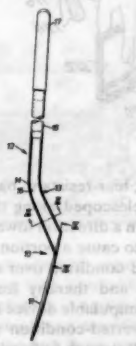


A light-weight tobacco rack comprising a pair of separable substantially U-shaped rack frames, one of which has a plurality of spikes thereon for penetrating a mass of tobacco leaves, and wherein corresponding legs of the frames are telescopically arranged to facilitate assembling and separating the rack frames.

3,767,249
HAND TOOLS, PARTICULARLY FOR GARDENING

Edward A. Rogers, Ashford Common, Middlesex, England, assignor to Wilkinson Sword Limited, London, England

Filed Mar. 30, 1972, Ser. No. 239,444
Claims priority, application Great Britain, Apr. 6, 1971, 10,644/71; May 27, 1971, 17,598/71; Aug. 7, 1971, 37,191/71
Int. Cl. A01b *1/02*; B25g *3/34*
U.S. Cl. 294—49 8 Claims

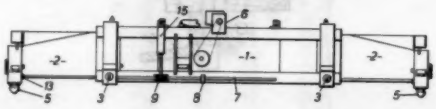


The hand tool comprises a working head, such as a spade blade or a fork, welded to a tubular tang-forming portion of a handle, the tang-forming portion comprising two telescoped tubes which have been bent to a curved shape and flattened to an oval cross-section over the curved part and up to one end. The major axis of the oval section lies in the plane of curvature, and the end of the tubes is cut off obliquely in a plane normal to the plane of curvature to provide an end surface of elongate oval shape which is welded around its periphery to a flat surface of the working head.

3,767,250
LOAD HANDLING MEANS

Peter Thomas Ward, Lichfield, Staffordshire, England, assignor to Rubery, Owen & Co. Limited, Wednesbury, England

Filed Apr. 14, 1971, Ser. No. 134,013
Claims priority, application Great Britain, Apr. 21, 1970, 18,903/70
Int. Cl. B66c *1/00*
U.S. Cl. 294—81 SF 2 Claims

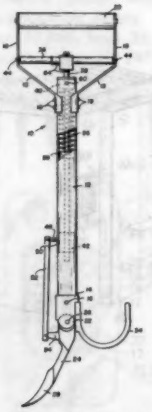


A freight container is picked up by a crane or carrier by means of a spreader frame of adjustable length and having twistlocks for engaging the corner castings of the container. A square tube for operating the twistlocks is slidably engaged with a sleeve which is rotated by an hydraulic jack. A link connected to the jack can be made to move by the jack in preference to the sleeve.

3,767,251
WEED EXTRACTING DEVICE

Frank J. San Filipo, 120 Traymore Rd., Rochester, N.Y.

Filed Apr. 6, 1972, Ser. No. 241,529
Int. Cl. A01b *1/16*
U.S. Cl. 294—50.8 4 Claims



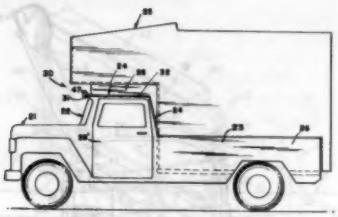
A weed extracting device comprising a body member having a weed extracting member pivotally secured thereto and movable through an angle from an extended position, in which the extracting member is locked to the body member with its free end in substantial alignment therewith or offset at a small angle for insertion in the ground beneath a weed, to an extracting position, in which the extracting member is substantially at right angles to the body member, and extracts the weed from the ground.

3,767,252

CAMPER PICKUP TRUCK WITH REMOVABLE HARD TOP COVER

Milton R. Hathaway, Jr., 30 Parlee Rd., Chelmsford, Mass.

Filed Sept. 21, 1971, Ser. No. 182,428
Int. Cl. B60p 3/32
U.S. Cl. 296—23 MC 3 Claims



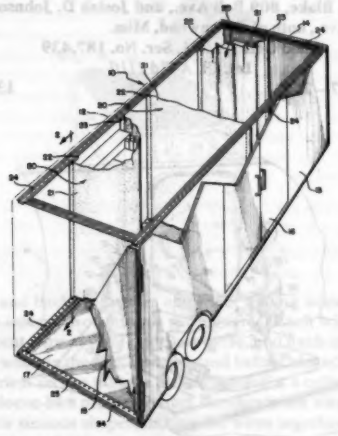
The invention comprises a pickup truck and camper device. The pickup truck device has an open cab and the camper has a cab cover permanently mounted to the camper. When the camper is detachably mounted to the box of the pickup truck, the cab cover of the camper detachably covers the open cab of the truck. A replacement cab portion is provided to cover the open cab of the truck when the camper is detached.

3,767,253

ADJUSTABLE CARGO WALL

George J. Kluetsch, Oakbrook, Ill., assignor to Illinois Mobile Leasing Corporation, Chicago, Ill.

Filed Apr. 28, 1972, Ser. No. 248,662
Int. Cl. B60p 7/00
U.S. Cl. 296—24 R 9 Claims



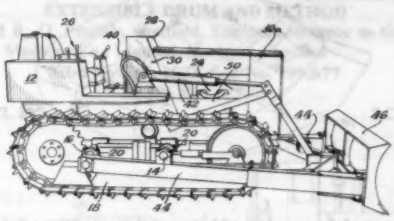
The invention comprises an adjustable wall which in its simplest form includes a flexible curtain wall which is secured to and extends between a pair of poles which are adapted to be positionally secured at various locations within a vehicle, between for example, the roof and the floor thereof, to define a cargo space in which cargo can be segregated. The pair of poles preferably are spring loaded and, preferably, a vehicle has at least two pair of tracks secured to the roof and the floor of the vehicle, for receiving the respective ends of the spring loaded poles, for securing the flexible curtain wall in position.

3,767,254

TRACTOR BODY WITH INTEGRAL UPRIGHT A-FRAME

Frederick A. Skanes, Burlington, Ontario; Roy O. Ayranto, Grimsby, Ontario, and Ronald G. Kraemer, Mitchell, Ontario, all of Canada, assignors to International Harvester Company, Chicago, Ill.

Division of Ser. No. 857,109, Sept. 11, 1969, Pat. No. 3,725,996. This application Jan. 21, 1972, Ser. No. 219,633
Int. Cl. B62d 27/00
U.S. Cl. 296—28 R 8 Claims



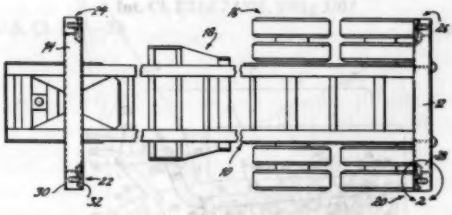
Crawler dozer and crawler loader having a common design in which the same basic upright frame in the center serves as the implement-linkage mounting structure and, at the same time, forms an integral part of the crawler tractor body. The frame is an A-frame disposed in a transverse vertical plane. It has two double walled legs in the case of the loader and, in either case, has side plates forming those two legs of the frame and clamped at four points on front and rear tractor gage bars by individual, longitudinally and transversely spaced apart, clamping joints.

3,767,255

CHASSIS WITH LOCKING DEVICE

William A. Bertolini, Kinnelon, N.J., assignor to Bertolini Engineering Co., Inc., Kinnelon, N.J.

Division of Ser. No. 181,921, Sept. 20, 1971. This application Oct. 31, 1972, Ser. No. 302,615
Int. Cl. B60p 1/64; B65j 1/22
U.S. Cl. 296—35 A 5 Claims



A 90° rotatable lock member is disclosed for releasably locking a container to the bolster of a chassis. The lock member shank has upper and lower bearing supports and is provided with an offset captive, but removable, handle. The handle has open and closed positions and is spring-biased into niches defining each of said positions for the handle.

3,767,256

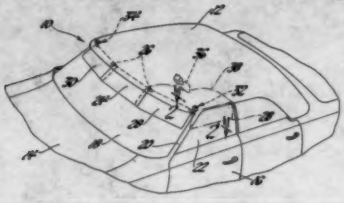
SUNSHADE SUPPORT ASSEMBLY

Henry R. Sarkees, East Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 30, 1972, Ser. No. 239,487
Int. Cl. B60j 3/02
U.S. Cl. 296—97 K 5 Claims

A sunshade support assembly includes a base member for mounting on a vehicle roof adjacent the upper end of a windshield side pillar and having a generally vertically extending aperture providing an annular mounting edge. A sunshade support rod includes a generally horizontally extending elon-

gated portion for supporting a sunshade and a frustoconical end portion which extends upwardly through the aperture in the base member and is resiliently seated against the mounting edge by a helical spring arrangement. The elongated portion is movable above the vertical axis of the end portion in a generally pivotal manner to allow sunshade use at the windshield or the adjacent side door window opening. During



movement of the support rod between these positions, integral camming portions on the base member and support rod act against the spring to cam the end portion downwardly and tip it relative to the vertical. This camming action supplies a dipping movement to the elongated portion of the support rod and allows it to bypass roof mounted obstructions located in the plane it defines while in the use positions.

3,767,257

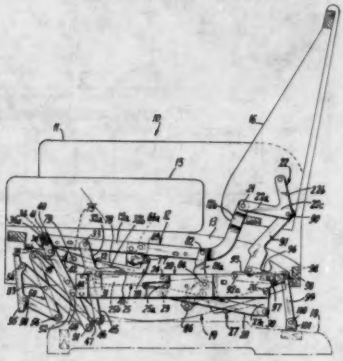
HANDLE CONTROLLED RECLINER ROCKER LOUNGER

Walter C. Rogers, Jr., High Point, and Morton Snitzer, Rocky Mount, both of N.C., assignors to Cleveland Chair Company, Inc., Cleveland, Tenn.

Filed Dec. 10, 1970, Ser. No. 96,781

Int. Cl. A47c *1/024*

U.S. Cl. 297—85 **2 Claims**



This design combines a handle and pressure operation linkage in a recliner-rocker in which the seat and side arms are one unit. The handle operation precludes the necessity of movement between the seat and arms for activation of the linkage, allowing Tee cushion styling, and also allowing the arms to remain in a more useful position relative to the occupant's comfort. The pressure activation linkage affords more occupant control. The foot rest is locked in retracted position by past-center linkage to restrain linkage movement, and the foot rest is held in projected position by on-center position of the pivots in the handle, bell crank and actuator link which control the foot rest linkage.

This invention relates to recliner-rockers and foot rest linkages and controls therefor.

3,767,258

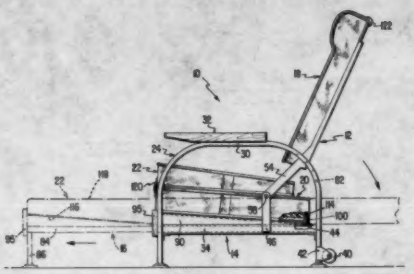
CONVERTIBLE FURNITURE CONSTRUCTION

Jack E. Spence, Collins, Miss., assignor to Durfold, Inc., Jackson, Miss.

Continuation of Ser. No. 4,898, Jan. 22, 1970, abandoned. This application Feb. 7, 1972, Ser. No. 224,091

Int. Cl. A47c *1/028*

U.S. Cl. 297—111 **4 Claims**



A mobile furniture construction employing multi-position adjustment means for the selective use of the same as an upright chair, a lounge chair, a chaise lounge and a cot. Three interconnected and distinct relatively adjustable framework components are adapted to support three cushion assemblies which cushion assemblies are functionally interconnected with each other and the framework components to provide a unit handled construction. Two of the framework components are adjustably supported directly on the third component for the various multi-position adjustments thus obviating the usual linkage interconnections employed with constructions of the general type under consideration.

3,767,259

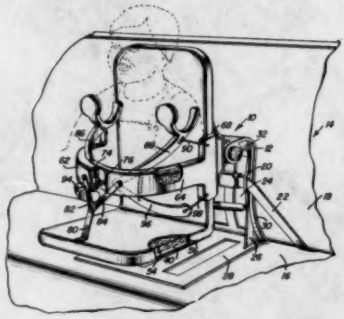
CHILD'S VEHICLE SAFETY SEAT ASSEMBLY

Pressley L. Blake, 809 Bell Ave., and Josiah D. Johnson, 1202 Strong Ave., both of Greenwood, Miss.

Filed Oct. 7, 1971, Ser. No. 187,439

Int. Cl. A47d *1/10*

U.S. Cl. 297—250 **13 Claims**



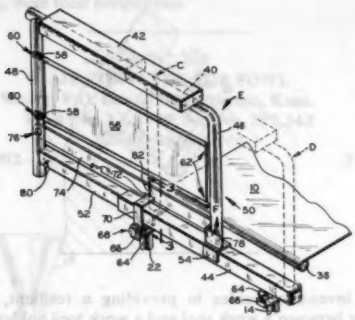
A safety seat assembly comprising a rigid support bracket adapted to rest upon a vehicle seat with means for fastening to the vehicle seat belt to prevent forward movement, and a cushioned chair with with a safety harness including underarm and side supports, said chair being connected to the support bracket by way of a cylindrical rubber mount extending horizontally across the center of the chair back and shock absorber assemblies interconnecting the chair back with the support bracket at points above and below the rubber mount.

3,767,260

HORIZONTALLY ADJUSTABLE ARMRESTS FOR WHEELCHAIRS

Paul D. Limpach, Napoleon, Ohio, assignor to Gendron-Diemer, Inc., Archbold, Ohio

Filed Aug. 20, 1971, Ser. No. 173,410
Int. Cl. A47c 7/54
U.S. Cl. 297—417 8 Claims



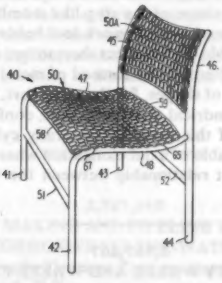
A horizontally adjustable armrest assembly for invalid wheelchairs incorporating mechanism for selectively positioning the armrest to facilitate ingress or egress and positioning of the wheelchair relative to a table, desk, or the like.

3,767,261

SEATING AND SUB-ASSEMBLY FOR SEATS AND BACKS AND METHOD FOR MAKING SAME

David L. Rowland, 8 E. 62nd St., New York, N.Y.

Filed Mar. 22, 1971, Ser. No. 126,563
Int. Cl. A47c 3/04, 7/14
U.S. Cl. 297—452 32 Claims



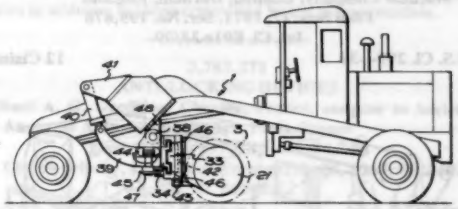
Seats and backs for chairs and other seating units are made as a sub-assembly of sinuous spring wires. Each wire touches its adjacent wire at least once per cycle, and each of the wires extends when in the sub-assembly and before placed therein as a cylindrical arc, so that the assembly itself is a cylindrical arc. A thin sleeve-like plastic coating surrounds the wires and follows their sinuous shapes, linking the wires together wherever they touch or closely approach each other, to provide the unitary assembly. In fact, the assembly is held together solely by this plastic coating. The assembly is intended to be flattened somewhat when installed on a chair frame, to place the springs in tension along a flatter cylindrical arc, and this tension is one of the main forces retaining the wires in place. The assembly, whether coated or not, is mounted at or near the ends of the individual wires on a suitable securing member of the frame. In preferred forms of the invention the plastic coating has an A scale Shore durometer between 45 and 90, so that the assembly is held together by the plastic coating without substantially restraining the flexing of the spring wires, while the coating also provides a spring action itself between the adjacent wires, by stretching and contracting, giving a two-way stretch. Front and rear border wires may be added to the assembly if desired and held to the adjacent sinuous wires by the plastic coating. A method for making such a sub-assembly is shown, as is a method for installing a sub-assembly on a suitable frame.

3,767,262

ROAD CUTTING MACHINE WITH LATERALLY EXTENSIBLE DRUM AND METHOD

Gerald R. O. Pentith, Sheffield, England, assignor to Greenside Machine Co., Limited, Durham, England

Filed Nov. 17, 1971, Ser. No. 199,677
Int. Cl. E01c 23/09
U.S. Cl. 299—10 7 Claims



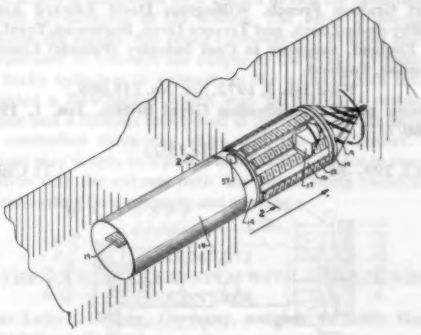
A machine for removing a worn road surface comprises a chassis on which is supported a rotary drum armed with cutting picks. To make possible a reduction in the inner radius of an arcuate path cut out by the rotary drum, the drum is traversable into a position lying outside the ground plan of the machine as defined by the wheels on which the machine is supported for movement.

3,767,263

EARTH MOVING-TUNNELING EQUIPMENT

Joseph W. Gootee, 19 N. Ritter Ave., Indianapolis, Ind.

Filed Oct. 29, 1971, Ser. No. 193,856
Int. Cl. E21d 23/08; E01g 3/03
U.S. Cl. 299—33 5 Claims



An earth moving apparatus used for drilling various size tunnels ; for example, sewer tunnels, mine shafts, etc. A cylindrical shaped machine with self-contained power plant, drilling devices, controls, dirt removal device and a work area. The power plant powers the drilling action of the primary drill bit and also provides the power for the forward motion of the machine. The primary drill bit rotates, therefore cutting the earth which is then carried by a conveyor belt out of the tunnel.

Tracks spaced around the circumference and rotated in a forward - aft direction to propel the machine and feed the pri-

mary (front) drill bit into the earth (dirt, rock, etc.). Also the tracks operate either mechanically or hydraulically in an in-out direction to give stability and traction and steering to the entire apparatus.

A variable angle secondary drilling device is provided to drill an access hole to the main tunnel; for example, a man hole tunnel to sewer, etc.

One or more cylindrical skirts are attached to the aft end of the machine to act as a means of shoring the tunnel walls and to provide a work area for men to install piping, tile, etc., in the tunnel shaft.

The Self-Contained Tunnel Drill can be manufactured in any diameter to accomplish the drilling of any size tunnel.

3,767,264

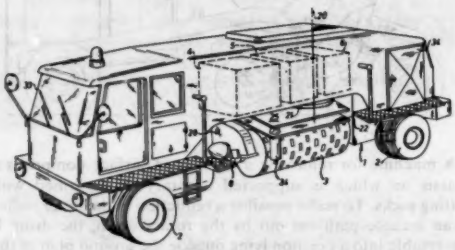
ROAD WORKING MACHINES

Horst Eckey, Overberge, Germany, assignor to Greenside Machine Company, Limited, Durham, England

Filed Nov. 17, 1971, Ser. No. 199,676

Int. Cl. E01c *23/09*

U.S. Cl. 299—39 **12 Claims**



A machine for removing a worn road surface comprises a chassis on which is supported a rotary cutting drum armed with cutting picks. The cutting drum is capable of being rotated about a vertical axis between a transport position within the track width of the machine and an operating position projecting from said track width.

3,767,265

DUST SUPPRESSION MEANS FOR MINING MACHINES

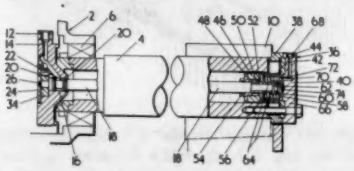
Albert Graham French, Willington; David Edward Keast, Ashby-de-la-Zouch, and Terence Oven, Burton-on-Trent, all of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Jan. 3, 1972, Ser. No. 215,006

Claims priority, application Great Britain, Jan. 1, 1971, 00,080/71

Int. Cl. E21c *35/22*

U.S. Cl. 299—81 **11 Claims**



A shearer mining machine having dust suppression equipment including a releasably fixed phasing element for distributing water only to the cutting portion of the drum, has a first member having a ring of teeth rotatable only with the phasing element on a non-rotatable second member having abutments engagable with the teeth. One of the members is spring loaded into the engaged position and in order to change the portion of the drum fed with water as is necessary when the direction of machine travel is reversed, the operator much overcome the spring loading and disengage the two members.

3,767,266

RESILIENT RETAINING MEANS FOR CONNECTING WORK TOOLS AND WORK TOOL HOLDERS

Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Co., Cincinnati, Ohio

Filed Aug. 10, 1970, Ser. No. 62,312

Int. Cl. E21c *25/46*

U.S. Cl. 299—92 **32 Claims**

This invention resides in providing a resilient, ring-like member between a work tool and a work tool holder so as, in many cases, to permit relative motion, axial and/or rotative, between them. The work tool and work tool holder are intended for use primarily in connection with mining, excavating and earth working machines and the like. The work tool may comprise elongated elements having a shank portion with a working tip at one end and a gauge-determining abutment surface at at least the other end. The work tool holders may comprise bodies having a shank receiving perforation and means in association with the bottom of the perforation having an abutment adapted to cooperate with the abutment on the work tool. The ring-like member may be positioned in a groove on the work tool with a portion thereof adapted to abut some part of the work tool holder or it may be located in a groove in the work tool holder with a portion thereof adapted to engage a shallow depression or the like in the work tool. The resiliency and shape of the ring-like member permits the work tool to be forced into the work tool holder whereafter it will often be movable with respect thereto but captively held. The ring-like member may be formed of metal or plastic and may have a variety of shapes, for the most part, however, having a generally cylindrical, at least in part, configuration. The working portion of this resilient, generally cylindrical, ring-like retainer is capable of axial elongation whereby to present a knock-in, pry-out relationship between the work tool and work tool holder.

3,767,267

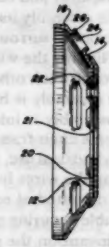
HEAVY DUTY WHEEL AND WHEEL CENTER

Richard H. Clement, 10900 Jann Ct., La Grange, Ill.

Filed Jan. 12, 1972, Ser. No. 217,214

Int. Cl. B60b *1/06*

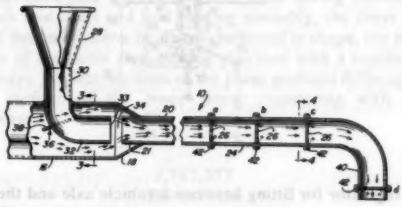
U.S. Cl. 301—6 CS **14 Claims**



A heavy duty wheel is made up of a disc wheel center and a rim, wherein the disc has a substantially flat central web por-

tion surrounded by an annular outer portion, offset at an angle about 35° from the plane of said central web portion. The central web portion is reinforced by a reinforcing plate welded thereto. The central web portion is adapted to be bolted to the hub by studs. Both the central web portion and reinforcing plate have holes which match up to the studs, and the holes are surrounded by a coined boss. The outer portion of the disc preferably has openings therein, radially aligned with each hole in the central web portion, said openings having flanges projecting from their peripheries.

3,767,268
AIR CONVEYOR FOR FOWL
James L. Stucky, P.O. Box 687, McPherson, Kans.
Filed Dec. 13, 1971, Ser. No. 207,343
Int. Cl. B65g *53/40*
U.S. Cl. 302—40 **7 Claims**



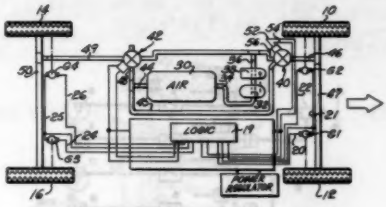
A device for conveying fowl from one point to another includes a conveyor chamber through which air under pressure is forced, a fowl inlet to the chamber having a conduit section extending longitudinally downstream and terminating within the chamber and conduit means exiting from the chamber and having an upstream end positioned closely adjacent but longitudinally spaced apart from the termination of the conduit section of the fowl inlet. A flow separator disposed within the chamber upstream of the termination causes the air to accelerate in flowing thereabout and to thereby create an area of reduced static pressure at the termination of the conduit portion.

3,767,269
METHOD OF MAKING AND PIPELINE TRANSPORTING A NON-CORROSIVE SULFUR-WATER SLURRY
Richard J. Horvath, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.
Filed Mar. 23, 1971, Ser. No. 127,387
Int. Cl. B65g *53/30*
U.S. Cl. 302—66 **1 Claim**

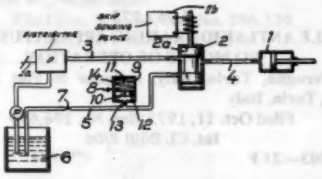
An improved method of making and pipeline transporting a sulfur-water slurry which is non-corrosive and non-clogging.

3,767,270
SKID CONTROL SYSTEM
John A. Urban, Livonia, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Mar. 17, 1971, Ser. No. 125,142
Int. Cl. B60t *8/08, 8/10, 8/12*
U.S. Cl. 303—21 BE **7 Claims**

A compound anti-skid logic system in which a plurality of different logic circuits are operative in parallel to process input signals from a common source in accordance with the different logic of each circuit with the different circuits complementing each other so that at least one logic circuit detects a wheel lock or an impending wheel lock under widely variable road conditions and brake application pressures. The compound system is incorporated in a master module with additional slave modules used with the master module to control axles in addition to those controlled by the master module.



3,767,271
ANTI-LOCKING DEVICES
Albert A. G. Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France
Filed July 14, 1970, Ser. No. 54,741
Claims priority, application France, July 28, 1969, 6925692
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 F **12 Claims**

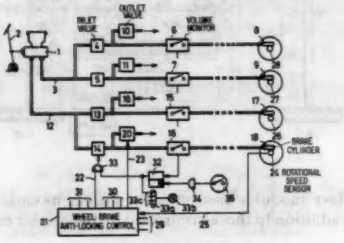


In a motor vehicle an anti-locking braking device associated with the wheel brakes and including supply fluid under pressure connectible to the brake cylinders through a three-way valve which is controlled by a known device for detecting abnormal deceleration of the wheels. The valve is interposed between the supply, the brake cylinders and exhaust and can be operated to connect the suuply to the brake cylinders or the brake cylinders to exhaust. In the exhaust path there is provided a flow-limiter which may be merely a restriction orofice and a damper interposed in the exhaust path between the controlled three-way valve and the flow-limiter. The damper may simply be a piston and cylinder device in communication with the exhaust path, the piston being balanced by the exhausting fluid pressure and a spring.

3,767,272
HYDRAULIC BRAKE SYSTEM WITH ANTI-LOCKING CONTROL
Heinz Leiber, Leimen, Germany, assignor to Teldix GmbH, Heidelberg, Germany
Filed Sept. 23, 1971, Ser. No. 183,028
Claims priority, application Germany, Sept. 23, 1970, P 20 46 802.4; Apr. 22, 1971, P 21 19 606.5
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 AF **30 Claims**

An improved hydraulic brake system of the type including an anti-locking control for preventing the locking of a wheel or wheels during a braking action, and shutoff valves in the lines which connect the pressure source, i.e., the master cylinder, to the wheel brake cylinders. At least one volume monitor, (leak detector) is provided for determining the volume of the pressure medium flowing from the pressure

source to the respective wheel brake cylinder and for emitting an electrical signal, which is used to close the associated shut off valve, whenever a certain threshold volume has been exceeded indicating a leak in the associated brake line. Various



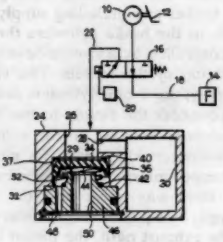
specific arrangements for the volume monitor control, both in single circuit and dual circuit brake systems and a preferred arrangement for the brake circuit distribution for a front wheel drive automobile are disclosed.

3,767,273

VEHICLE ANTI-SKID BRAKING APPARATUS HAVING TWO MODES OF OPERATION

Marco Peruglia, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed Oct. 11, 1972, Ser. No. 296,699
Int. Cl. B60t *8/06*
U.S. Cl. 303—21 F **3 Claims**



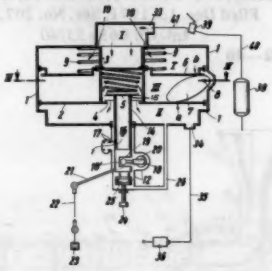
A valve for an antiskid braking system of the type in in which there is a source of braking pressure connectable to the brakes by means of a valve arrangement controlled by a device which is sensitive to the dynamic state of the wheels of the vehicle to connect the brakes to a discharge conduit if the wheels approach a state of incipient skid, the discharge conduit leading to a valve which is sensitive to the braking pressure to release the brakes in one of two different ways depending on the braking pressure which exists when the state of incipient skid arises. The valve means includes a communication part between an inlet and an outlet port, with a valve shutter biased by a spring to a first position against a shoulder of the port, in which position fluid flow is allowed by grooves in the face of the shutter and by a flexible rim the shutter is movable against the action of the spring to shut off the communication port if the braking pressure exceeds a predetermined threshold.

3,767,274

AUTOMATIC LOAD-DEPENDENT BRAKING FORCE REGULATOR

Hans Gruner, and Heinz Nicolay, both of Heidelberg, Germany, assignors to Graubremse GmbH, Heidelberg, Germany

Filed Jan. 20, 1972, Ser. No. 219,380
Claims priority, application Germany, Feb. 1, 1971, P 21 04 539.6
Int. Cl. B60t *8/22*
U.S. Cl. 303—22 R **18 Claims**



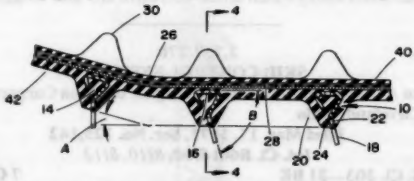
A regulator for fitting between a vehicle axle and the vehicle body for automatically regulating the braking effort by reference to the vehicle load, said regulator being incorporated in use, in a line connecting a brake valve with a brake actuating cylinder. The regulator comprises a casing containing a control piston which is shiftable according to the vehicle load, and which varies the ratio of the pressure admitted through the brake valve to the pressure delivered to the brake cylinders. The control piston is preceded by a free auxiliary piston to which the pressure admitted by the brake valve is likewise applied such that the pistons are urged towards one another. A variable transmission is interposed between the control piston and the free auxiliary piston and serves to vary the ratio of the admitted pressure to the delivered pressure according to the vehicle load.

3,767,275

STIFFENER AND TRACTION ELEMENT FOR ENDLESS TRACK

Paul E. Russ, Sr., Englewood, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Apr. 19, 1972, Ser. No. 245,418
Int. Cl. B62d *55/24*
U.S. Cl. 305—38 **20 Claims**



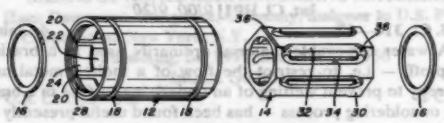
An embedable stiffener for transversely reinforcing and providing a wear surface for an endless track. The stiffener includes a traction element that extends exteriorly of the track.

3,767,276

BALL BEARING ASSEMBLY

Andrew Henn, Bridgeport, Conn., assignor to Hein Universal Corporation, Fairfield, Conn.

Filed Oct. 18, 1971, Ser. No. 189,898
Int. Cl. F16c 17/16
U.S. Cl. 308—6 C 5 Claims



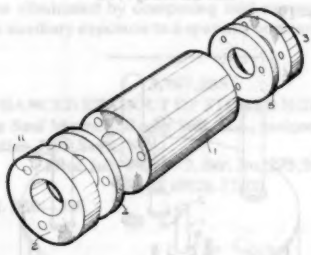
An anti-friction ball bearing assembly adapted for mounting on a shaft comprising an outer sleeve and an inner sleeve concentrically fitting within said outer sleeve, the inner sleeve having a number of tracks defining paths for the circulation of balls between said sleeves and said shaft during movement between said shaft and said bearing assembly, the outer surface of the inner sleeve being polyhedronal in shape, the inner surface of the outer sleeve being provided with a number of guideways, the intersections of the plane portions defining the outer surface of the inner sleeve registering with said guideways.

3,767,277

BEARINGS

Geoffrey Dennis Woolcock, Oxford, England, assignor to Evanswoods Limited

Filed Jan. 31, 1972, Ser. No. 222,136
Int. Cl. F16c 17/16
U.S. Cl. 308—9 22 Claims



The specification discloses a hydrostatic bearing in which the channels for the passage of the lubricating fluid are defined between a pair of surfaces clamped together, at least one of the surfaces having been roughened as a result of treatment with a high velocity stream of abrasive particles. A linear, thrust and radial bearing are described.

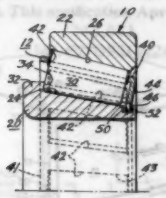
3,767,278

CAGE FOR ROLLING BEARING ASSEMBLY

Elmer E. Knowles, King of Prussia, Pa., assignor to SKF Industries, Inc., King of Prussia, Pa.

Filed Nov. 3, 1972, Ser. No. 303,423
Int. Cl. F16c 33/00
U.S. Cl. 308—214 6 Claims

A cage for a rolling bearing having inner and outer ring members spaced apart to define an annular space for a plurality of rolling elements comprising an annular body portion having a plurality of pockets for the rolling elements, one of said ring members having a circumferential groove spaced inwardly from the axial end face thereof to define a circumferential rib, at least one entrance slot in said rib communicating with said groove, said cage having at least a pair of lugs projecting radially from said body portion, said lugs, entrance channel and groove being of a predetermined dimensional relationship so that when a lug is aligned with said entrance slot the cage can be moved axially so that said lugs engage in said groove whereby upon relative rotation of said cage and ring the lugs confront said rib to prevent axial movement of said cage relative to said one ring.

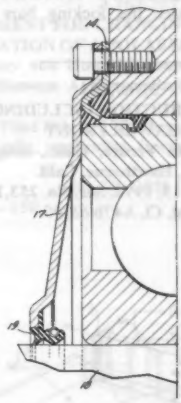


3,767,279

FLEXIBLE FLANGE FOR BEARINGS, PREFERABLY ROLLING BEARINGS

Stig Lennart Hallerback, Vastra Frolunda, Sweden, assignor to SKF Industrial Trading and Development Company N.V., Amsterdam W., Netherlands

Filed Dec. 9, 1971, Ser. No. 206,329
Int. Cl. F16c 43/00, 33/78
U.S. Cl. 308—236 4 Claims

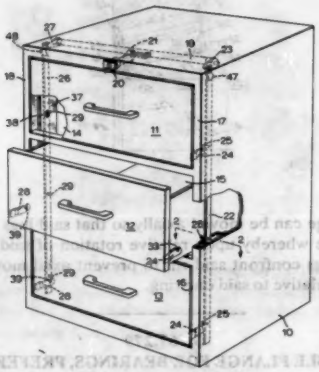


For use in mounting a ring of a bearing in a housing having an axial end section and a seat for the ring, the ring having a peripheral surface thereof confronting the seat and spaced axially inwardly from one axial end face of the ring, the ring having an axial land surface between the groove and axial end face, a seal assembly comprising a radial portion and an axial portion depending from the inner edge of the radial portion, said radial and axial portion including reinforcing member at least partially imbedded in an outer casing made of elastic material, said reinforcing member having an angle-shaped cross section imbedded in the radial portion of the seal and a section depending from the angle-shaped section, the end of the axial portion of the casing engageable in the groove of the ring, the housing, inner ring and seal being of a predetermined relation so that upon assembly of the seal, a face of the radial portion of the seal is compressed against the axial end section of the housing, the inner radial portion and the axial portion are pressed against the axial land surface of the ring whereby the seal is under radial and axial pressure to effectively prevent creeping of the seal.

3,767,280
LOCKING SYSTEM FOR FILING CABINETS

Gordon McLaughlin, Beachburg, Ontario, Canada, assignor to Eddy Match Company Limited, Toronto, Canada

Filed Mar. 14, 1972, Ser. No. 234,515
Int. Cl. E05b 65/46
U.S. Cl. 312—219 4 Claims

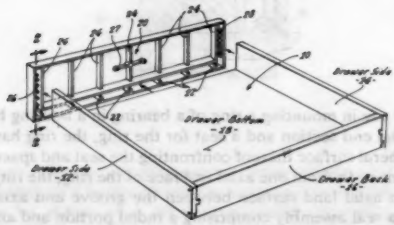


A locking system for the drawers of articles of furniture such as desks and filing cabinets having a lock-actuated rotatable rod member and vertically movable locking bars at the sides of the drawers with locking studs thereon engageable with brackets on the drawers. The rotatable rod member engages with and actuates the locking bars upwardly and downwardly.

3,767,281
DRAWER CONSTRUCTION INCLUDING PLASTIC DRAWER FRONT

James S. Adams, Palos Verdes, Calif., assignor to Adams Brothers Plastic, Inc., Hawthorne, Calif.

Filed May 15, 1972, Ser. No. 253,140
Int. Cl. A47b 88/00
U.S. Cl. 312—330 5 Claims



An improved drawer construction is provided which includes a usual box section composed, for example, of wood; and which includes a plastic front member for the drawer which may simulate wood, and which extends across the open front of the box. The plastic front member is configured to have integral ribs formed in its rear surface which define slots for receiving the front edge of the box, and which also constitute supports for the front edge of the bottom of the box. The plastic front member may be composed of an appropriate plastic material, such as polyvinylchloride, for example, so that it may be stapled, or otherwise appropriately fastened to the front edge of the box.

3,767,282
PROTECTION OF TERMINAL METALLURGY DURING WORKING AND REWORKING OF GAS DISCHARGE DISPLAY DEVICES

Neil M. Poley; Howard L. Whitaker, and Donald M. Wilson, all of Kingston, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

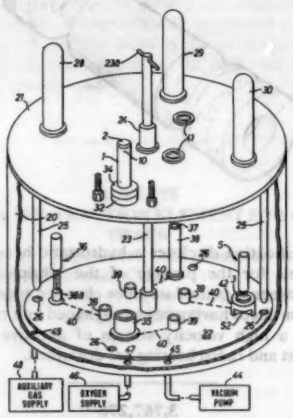
Filed Nov. 15, 1971, Ser. No. 198,953
Int. Cl. H01j 9/00, 9/20
U.S. Cl. 316—17 4 Claims

A water removable material ordinarily used as a brazing stop-off — i.e. to restrict the flow of a molten metal and thereby to prevent wetting of an underlying surface in a brazing or soldering process — has been found useful presently as a means to prevent oxidation of, or other damage to, terminal metallurgy of metallized glass components during protracted periods of baking, gas-filling and glass sealing processing incidental to fabrication of gas discharge display panel assemblies. The subject baking, gas-filling and sealing processing involves hours or even days of variant temperature treatment, which should be distinguished from seconds or at most minutes of brazing treatment. The protective function required of the water removable coating during this prolonged processing period is considered unique and eliminates certain application and removal process operations associated with the use of other protective media (e.g. sintered glass frit).

3,767,283
IMPROVEMENTS IN OR RELATING TO ELECTRON DISCHARGE DEVICES

Raymond Frank Sivyer, Sunbury-on-Thames, England, assignor to EMI Limited, Hayes, Middlesex, England

Filed May 4, 1971, Ser. No. 140,189
Claims priority, application Great Britain, May 7, 1970, 22,195/70
Int. Cl. H01j 9/18
U.S. Cl. 316—19 4 Claims



An electron discharge device has a hermetic pinch seal formed by an indium type pressure seal. A method and apparatus for the manufacture thereof are also described. The apparatus comprises a demountable vacuum system having a removable top with ports therein, in one of which is mounted the envelope of the device being manufactured and in the others of which are mounted other envelopes. A rotatable and reciprocable platform in the vacuum chamber carries an evaporator for forming a photoelectric layer in the envelope and an electron gun on a pinch for sealing into the envelope. The platform also carries a test electron gun the beam from which is scanned over the photoelectric layer to test it, and an

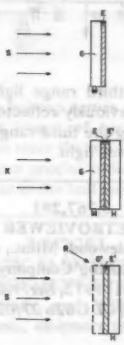
oven for baking the lower part of the envelope of the device. The various devices mounted on the platform are raised so that they enter respective envelopes for the purpose of degassing them.

3,767,284

METHOD OF MANUFACTURING A HOLOGRAM BY MEANS OF NONLINEAR RECORDING MATERIALS

Hans Dammann, Tangstedt, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 24, 1971, Ser. No. 174,356
Int. Cl. G02b 27/00
U.S. Cl. 350—3.5 2 Claims



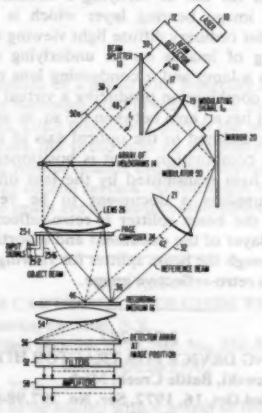
A method as described of manufacturing a hologram by means of non-linear recording materials. It is proved that the influence of a disturbing exposure distribution can substantially be eliminated by composing said exposure distribution with an auxiliary exposure to a spatially constant exposure.

3,767,285

ENHANCED READOUT OF STORED HOLOGRAMS

Reuben Saul Mezrich, Rocky Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed July 28, 1972, Ser. No. 275,930
Int. Cl. G02b 27/00
U.S. Cl. 350—3.5 6 Claims



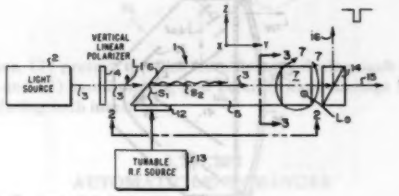
Virtual image readout of relatively high intensity is obtained by employing two readout beams, one following the path of the reference beam and the other following the path of the object beam, and modulating at least one of the beams. Amplitude, intensity or phase modulation may be employed.

3,767,286

ACOUSTO-OPTIC FILTER HAVING MEANS FOR DAMPING ACOUSTIC RESONANCES

John A. Kusters, 736 Sutter Ave., San Jose; David A. Wilson, 1691 McGregor Way, Palo Alto, and Laurence M. Hubby, Jr., 1901 Cooley Ave., #1, East Palo Alto, all of Calif.

Continuation-in-part of Ser. No. 165,629, July 23, 1971, Pat. No. 3,729,250. This application Apr. 10, 1972, Ser. No. 242,513
Int. Cl. G02f 1/24
U.S. Cl. 350—149 14 Claims



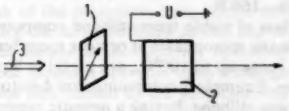
Interactive acoustic resonances in an acoustically excited photoelastic optically birefringent crystal of an acousto-optic filter are reduced by inclining the output face of the crystal at such an angle to reflect acoustic wave energy incident on the output face into the side walls of the crystal and preferably out of a plane of interaction defined by the input light polarization vector and the group velocity vector of the acoustic wave.

3,767,287

ARRANGEMENT FOR CHANGING THE DIRECTION OF POLARIZATION OF A POLARIZED BEAM OF LIGHT

Ulrich Freiherr von Hundelshausen, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 2, 1972, Ser. No. 222,773
Claims priority, application Germany, Feb. 10, 1971, P 21 06 365.0
Int. Cl. G02f 1/26
U.S. Cl. 350—150 4 Claims



A method for influencing a light beam by applying an electrical signal to cause phase modulation, amplitude modulation or deflection of the light beam using an electro-optic crystal made of a compound having a cation and an anion and containing a thiocyanate complex in the anion. The compound has two different metals which are selected from Groups I and II of the periodic system of elements. Preferably one of the metals is mercury and forms with the thiocyanate complex the anion complex having a formula of $[Hg(SCN)_4]$. The other metal is preferably selected from a group consisting of zinc, cadmium, copper and gold. The electro-optic crystal is used with a polarizer to phase modulate a light beam in accordance to the voltage applied to the electrodes of the crystal or the electro-optic crystal can be used to amplitude modulate a light beam by being placed between a pair of polarizers. The electro-optic crystal can be utilized between a polarizer and a prism to deflect a light beam in accordance with the voltage applied to the crystal.

3,767,288

DEVICE FOR ILLUMINATING THE TRAVELING PATH OF A VEHICLE AND PROTECTING THE DRIVER FROM DAZZLING

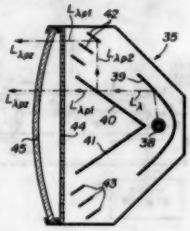
Daniel Gross, Carouge, Geneva, Switzerland, assignor to Battelle Memorial Institute, Carouge/Geneve, Switzerland

Filed Dec. 1, 1971, Ser. No. 203,784

Claims priority, application Switzerland, Dec. 10, 1970, 18578/70

Int. Cl. G02b *5/28, 27/28*

U.S. Cl. 350—156 **19 Claims**



A device for illuminating the travelling path of a vehicle and protecting the driver thereof from dazzling by opposed source of light, comprising at least one headlight with a source of light formed by a linear light radiator whose light emission is limited mainly to certain spectral lines distributed over the visible range, and an optical filter adapted to the light emission of the linear radiator and arranged between the travelling path of the vehicle and the driver thereof, the optical filter being penetrable by the light coming from said headlight and being impenetrable by light of other wave-lengths.

3,767,289

CLASS OF STABLE TRANS-STILBENE COMPOUNDS, SOME DISPLAYING NEMATIC MESOPHASES AT OR NEAR ROOM TEMPERATURE AND OTHERS IN A RANGE UP TO 100° C

Arieh Aviram, Ossining, N.Y.; Robert J. Cox, Los Gatos, Calif., and William R. Young, Mount Kisco, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,340

Int. Cl. G02f *1/20*

U.S. Cl. 350—160 R **16 Claims**

A new class of stable trans-stilbene compounds, some displaying nematic mesophases at or near room temperature and others in a range up to 100°C., are useful in liquid crystal display devices. Exemplary compounds are 4-butoxy, 4′-n-butyl-β-chloro trans-stilbene, having a nematic range of 30°–52°C., 4-ethoxy, 4′-n-butyl-β-chloro trans-stilbene, having a nematic range of 29°–58°C., and 4-ethoxy, 4′-(2-methylbutyl)-β-chloro trans-stilbene, having a nematic range of 29°–34°C.; a mixture containing 60 mole-% 4-ethoxy, 4′-n-butyl-β-chloro trans-stilbene and 40 mole-% 4-ethoxy-4′-n-octyl-β-chloro trans-stilbene has a nematic range of 8°–59°C.

3,767,290

BEAM SPLITTING PRISM SYSTEM FOR COLOR TELEVISION

Heinwig Lang, and Fritz Laschat, both of Darmstadt, Germany, assignors to Fernseh GmbH, Darmstadt, Germany

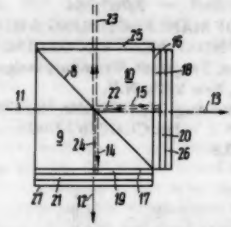
Filed Apr. 9, 1971, Ser. No. 132,762

Claims priority, application Germany, Apr. 17, 1970, P 20 18 397.5

Int. Cl. G02b *27/14*

U.S. Cl. 350—173 **4 Claims**

Light is divided into three spectral ranges. A first range passes through a dichroic coating separating double prisms. A second range is reflected. A third range is partially reflected and partially transmitted according to polarization. Quarter wave plates change polarization as dichroic coatings at faces of the prisms reflect the third range back into the prisms.



Previously transmitted third range light is reflected at the prism interface, and previously reflected third range light is transmitted, recombining the third range. Filters at the prism exit faces remove unwanted light.

3,767,291

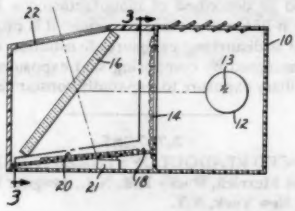
RETROVIEWER

Edgar G. Johnson, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 31, 1972, Ser. No. 240,132

Int. Cl. G02b *27/02*

U.S. Cl. 350—237 **7 Claims**



A retroviewer for use in verifying a document having a retro-reflective image bearing layer which is substantially transparent under ordinary diffuse light viewing conditions to provide viewing of images on an underlying surface. The viewer includes a lamp and a condensing lens mounted in a housing and in combination producing a virtual image of the light source that has an area between 0.5 sq. in. and 3 sq. in. A beam splitter is inclined to the optical axis of the lamp and condenser lens combination and it is positioned to reflect a portion of the light transmitted by the lens onto a viewing stage which supports a document to be verified. Light reflected from the beam splitter is retro-reflected from the image bearing layer of the document and a portion thereof is transmitted through the beam splitter for viewing to verify the document by its retro-reflective image.

3,767,292

ALIGNING DEVICE FOR TRACTOR HITCHES

Phillip R. Rutkowski, Battle Creek, Mich.

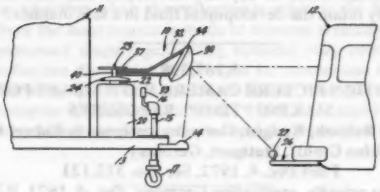
Filed Oct. 16, 1972, Ser. No. 297,984

Int. Cl. G02b *5/10*

U.S. Cl. 350—293 **7 Claims**

A device is provided for assisting an operator in backing up a trailer-towing or tractor vehicle to couple a ball hitch member mounted on the rear of the vehicle with the complementary socket hitch member mounted on the tongue of the

trailer. The device comprises a bracket adapted to be mounted on the trailer, and particularly on the vertical bolt utilized for clamping the bottles of cooking and heating gas, and provided at one end with means such as a clamp adapted to engage and support a large size hubcap having a convex



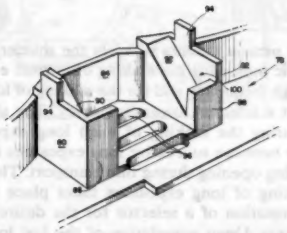
reflecting surface. The hubcap serves as a convex mirror and provides an excellent image of both hitch members for enabling the operator to steer the tractor vehicle in the proper direction, and provides a precise indication when the socket member is superposed over the ball member.

3,767,293

UNIQUE PRISMATIC ELEMENT AND MOUNTING ARRANGEMENT THEREFOR

Philip G. Baker, Peabody, and William A. Holmes, Marblehead, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 3, 1972, Ser. No. 215,000
Int. Cl. G03b *23/02*
U.S. Cl. 352—78 R **23 Claims**



The combination of a prism with integrally formed mounting ears and a mounting station into which the prism and its ears are placed. Once positioned, part of the mounting station is bent to secure the prism into its predetermined location. The mounting station retains the prism through its ears and not through any optical surface. Accordingly, all three optical surfaces of the prism are left unencumbered for more efficient cooling.

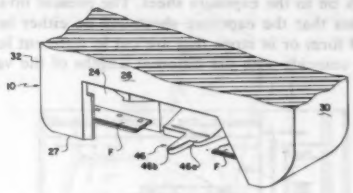
3,767,294

FILM CARTRIDGE WITH GUIDE FINGER

Gerald J. Kosarko, Pavilion, N.Y.

Filed May 24, 1972, Ser. No. 256,552
Int. Cl. G03b *23/02*
U.S. Cl. 352—78 R **2 Claims**

A cartridge to be loaded with a length of film or other strip material is adapted to be positioned in a sound motion picture camera, projector or other sound recording or reproducing apparatus. The cartridge has an open area across which the strip material extends so that the strip material in this area can cooperate with the sound mechanism of the apparatus. A guide finger is positioned with respect to the open area in the cartridge to (1) contain the strip material within the cartridge body and guide the film into position relative to the sound mechanism during insertion of the cartridge into the apparatus, (2) protect the film from damage during such insertion, and (3) avoid picking and possibly hand-damage to the film during such insertion.

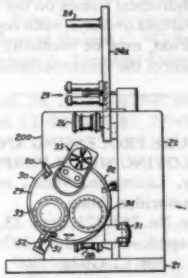


3,767,295

AUTOMATIC LENS CHANGER

Lewis Gerber, Salt Lake City, Utah

Filed July 3, 1972, Ser. No. 268,685
Int. Cl. G03b *41/00*
U.S. Cl. 352—79 **8 Claims**



A rotatable turret carrying first and second lenses is mounted forwardly of a projection lamp of a cinematographic projector. The turret is rotatable between first and second angular positions to selectively position the first or second lens in the optical path of the projection lamp. Drive means is provided for rotating the turret between its first and second positions, and sense means is provided for operating the drive means. The sense means is operable upon a change of format contained on the film carried by the projector, the classes of format being characterized by different frame sizes. Preferably, variable aperture apparatus is responsive to a change in the angular position of the turret to alter the size of the projection aperture in accordance with the frame size of the film format.

3,767,296

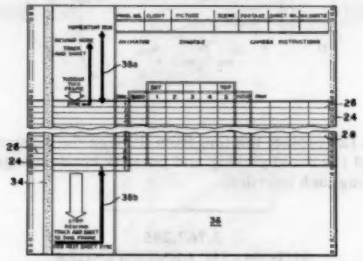
APPARATUS FOR MAKING ANIMATED MOTION PICTURES OR THE LIKE

George H. Rufle, and George G. Rufle, both of Laurelton, N.Y.

Filed Nov. 24, 1971, Ser. No. 201,752
Int. Cl. G03b *21/32*
U.S. Cl. 352—87 **15 Claims**

An exposure sheet that is used in preparing animated motion pictures is provided with a recording medium, such as a strip of magnetic tape, extending along the length thereof. The exposure sheet is subdivided into horizontal sections that coincide in position with frames on a master sound track. Sprocket holes are provided in the exposure sheet to insure synchronization with the master sound track, when the signals

are transferred from the master sound track to the recording medium on the exposure sheet. A stylus, responsive to the audio signals on the master sound track, may be used to apply a visual indication or display of the audio signal on the master sound track on to the exposure sheet. The present invention contemplates that the exposure sheet will be either in continous, reel form or in strips that are cut to different lengths and which coincide with the different lengths of the various



scenes. Alternatively, the exposure sheets may be cut in equal lengths that are secured together and are adapted to be used in table form. In use, a transducer, such as a pick-up head, may be moved over the magnetic tape on the exposure sheet in order to evaluate individual frames on the master sound track. At the same time various overlays, each representing a portion of the total animation, may be manually flipped in order to provide an indication of the synchronization.

3,767,297

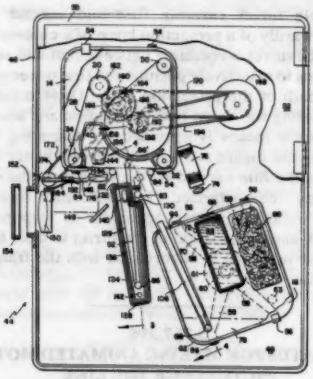
MOTION PICTURE PROCESSING AND PROJECTION SYSTEM EMPLOYING MULTI-PURPOSE CASSETTE

Roger B. Downey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 761,771, Sept. 23, 1968, Pat. No. 3,597,062. This application Oct. 23, 1970, Ser. No. 83,645

Int. Cl. G02c *11/00*

U.S. Cl. 352—130 **18 Claims**



A motion picture system utilizing a casseete having two releasably connected sections. In one section respective ends of a strip of film are permenently attached to reels for reversible transport across a film gate, while the other section contains development fluid. Initially, when the two sections are connected together, the cassette is adapted to be positioned in a camera for exposure purposes. Subsequently, the two sections are separated and mounted independently in a unique projector in which the film is sequentially and simultaneously developed, by passing a loop thereof drawn from the film gate of the first section through the developing fluid contained in the second section, dried and projected through an appropriate optical system. Specially devised features are employed in the projector to release the development fluid from a sealed container into a reservoir section of the developing section of the cassette, to draw the loop of film from the film gate of the first section and insert the loop into the reservoir of development fluid, to dry the developed film and to subsequently retain the development fluid in a safe manner.

3,767,298

MOTION PICTURE CAMERA WITH MEANS FOR MAKING "TIME" EXPOSURES

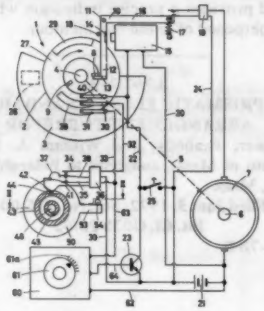
Herbert Reinsch, Kongen, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart, Germany

Filed Dec. 4, 1972, Ser. No. 312,121

Claims priority, application Germany, Dec. 4, 1971, P 21 60 277.7

Int. Cl. G03b *21/38*

U.S. Cl. 352—169 **15 Claims**



A motion picture camera wherein the shutter is adjustable by an electric motor for the making of normal exposures at a relatively high frequency and for the making of long or "time" exposures at a selected lower frequency. The shutter is at a standstill during the making of each long exposure and is rotated only between successive long exposures to overlie the light-admitting opening during film transport. The adjustment for the making of long exposures takes place in automatic reponse to rotation of a selector for the desired number of long exposures. Upon completion of the last long exposure, the shutter is automatically reset for the making of normal exposures and the motor is arrested.

3,767,299

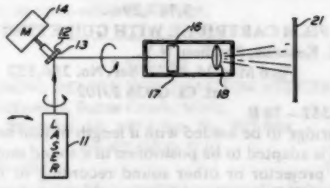
DISPLAY PROJECTOR

Jules Fisher, 255 W. 19th St., New York, N.Y.

Filed Oct. 20, 1971, Ser. No. 190,969

Int. Cl. G03b *21/28*

U.S. Cl. 353—38 **9 Claims**



A visual display system comprising a laser light source, patterned display generating material mounted in a plane

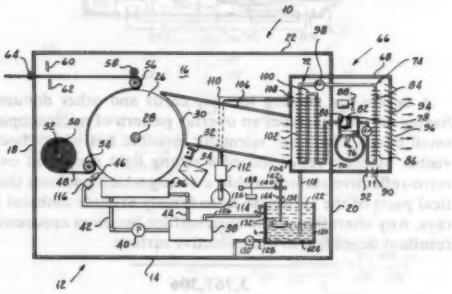
traversing the path of a beam of light from the source, means for continuously moving the beam from said source relative to the display generating material, and projection means for projecting images of the patterns on the display generating material onto a display surface. The display system may further include a reflector mounted in the optical path between the patterned display generating material and the laser light source, the reflector having an eccentric reflecting surface whereby, when the reflector is rotated, the beam of light from the laser source is made to traverse a circular path. The patterned display generating material may comprise a light reflective disc which is mounted for continuous rotation traverse of the path from the beam of said laser source or it may comprise a translucent material which is located between the above noted eccentric reflector and the projection means.

3,767,300

POLLUTION CONTROL SYSTEM FOR DUPLICATOR MACHINE

Paul I. Brown, Beachwood, and Arlie L. Brown, Parma, both of Ohio, assignors to Savin Business Machines Corporation, Valhalla, N.Y.

Filed June 7, 1972, Ser. No. 260,453
Int. Cl. G03g *15/00*
U.S. Cl. 355—15 **20 Claims**



A pollution control system for an electrostatic copying machine employing a developer made up of toner suspended in a light, hydrocarbon liquid carrier in which polluted air from the region of the photoconductive surface enclosed in a generally closed cabinet is passed through a cold trap to produce a condensate made up of the carrier liquid and water in which the condensate is separated into its component parts and the carrier liquid is returned to the supply and in which the cleared air is fed to an air knife which removes excess developer from the photoconductive surface immediately following development.

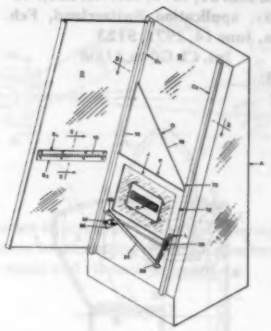
3,767,301

PHOTOGRAPHIC MODIFIER

Daniel X. Solo, 298 Crestmont Dr., Oakland, Calif.

Filed Jan. 10, 1972, Ser. No. 216,540
Int. Cl. G03b *27/68*
U.S. Cl. 355—52 **8 Claims**

A photographic modifier in which novel means is used for enlarging or reducing the height or width of the data on the negative while transferring the data to the photo-sensitive material. The device can also create a perspective of the data on the negative while transferring the data to the photo-sensitive material or it can form the data into different desired arcuate or curved shapes on the photo-sensitive material.

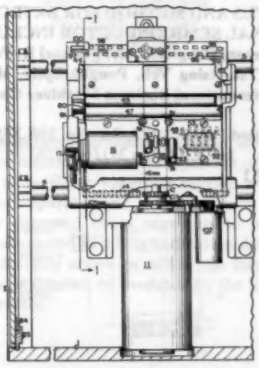


3,767,302

MICROFICHE CAMERA

William E. Roberts, Palos Verdes Peninsula; Ronald L. Whitney, San Fernando, and Ronald C. Wickenhiser, Van Nuys, all of Calif., assignors to Terminal Data Corporation, Van Nuys, Calif.

Filed Oct. 26, 1972, Ser. No. 301,012
Int. Cl. G03b *27/42, 27/46*
U.S. Cl. 355—53 **16 Claims**



A microfiche camera for exposing either relatively wide or narrow film at high speed with minimal inertial or frictional constraints. An objective lens is stationary, as are film path guides. A single pocket encloses a large loop of film prior to longitudinal movement of the film onto an orthogonally movable carriage, and also a small loop of film subsequent to photographic exposure of the film upon the carriage. The film guides are the width of the narrow film, save a wide transverse guide positioned near the entrance of the film onto the carriage. Suitable logic controls the motion of the carriage and the motion of the film thereon according to a desired fiche format. Vacuum adheres the film to a platen during exposure and air pressure separates these for rapid motion between exposures.

3,767,303
EGG INSPECTION DEVICE

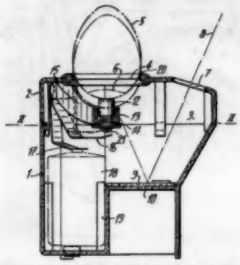
Jean Foufounis, and Chantal Foufounis, both of Avenue du Leman 32, Lausanne, Switzerland

Filed Jan. 31, 1972, Ser. No. 221,912

Claims priority, application Switzerland, Feb. 12, 1971, 2120/71; Austria, June 14, 1971, 5123

Int. Cl. G01n *33/08*

U.S. Cl. 356—63 **4 Claims**



An egg inspection device of light weight and small bulk, comprising a chamber into which part of an egg is inserted, comprising a partially screened electrical light source installed within the chamber and provided with electrical contacts which are activated by the insertion and removal of an egg. The chamber is provided with an opening for viewing, directly or indirectly by means of mirrors, the part of an egg having an air pocket which, when illuminated by the light source, permits its inspection to indicate the freshness of the egg. The device is capable of being operated under average room lighting conditions.

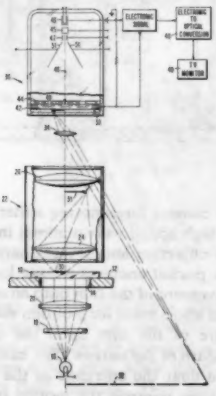
3,767,304
APPARATUS AND METHOD FOR DETECTION OF INTERNAL SEMICONDUCTOR INCLUSIONS

William A. Keenan, Poughkeepsie; Michael R. Poponiak, Newburgh, and Tsu-Hsing Yeh, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 3, 1972, Ser. No. 268,355

Int. Cl. G01n *21/16, 21/32*

U.S. Cl. 356—51 **8 Claims**



An apparatus for detecting the presence of inclusions in semiconductor material having a polychromatic light source, a support for a semiconductor body, a light sensing means positioned to operate on light transmitted through the body from the light source, the sensing means including a substrate of the same type of semiconductor materials as the material of the semiconductor body, and having at least a PN junction in the substrate with means to backbias the junction, a means to indicate the relative amounts of light transmitted through the semiconductor body that is sensed by the sensing means.

A method for detecting internal inclusion in a semiconductor body by directing through the body a beam of polychromatic light, sensing the light energy transmitted to the body with a light sensing element of the same type semiconductor material as the body being investigated.

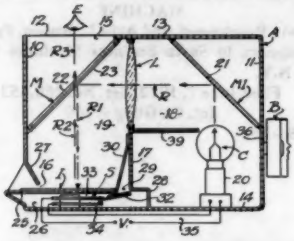
3,767,305
RETRO-REFLEX VIEWER FOR DETECTING COUNTERFEIT IDENTITY CARDS

Jack L. Craven, Anaheim, Calif., assignor to Electro-Photo Systems, Inc., Anaheim, Calif.

Filed Nov. 9, 1972, Ser. No. 305,102

Int. Cl. G06k *9/00;* **G02b** *27/02*

U.S. Cl. 356—71 **8 Claims**



A device for viewing identity cards and other documents having on their surfaces an overlay pattern of microscopically small beads which are normally invisible but which become visible by retro-reflection of a strong light projected on the retro-reflective surface within a casing which encloses the optical parts of the viewer so as to largely exclude ambient light rays. Any alteration of the card surface becomes apparent in a resultant degrading of the reflective surface.

3,767,306
METHOD AND APPARATUS FOR DETECTING DUST PARTICLES BY PARTIAL EMBEDMENT IN A LAYER WHOSE SURFACE IS DEFORMED BY THE PARTICLES AND MEASURING RADIATION SCATTERED BY THE PARTICLES WITH A SCHIEREN OPTICAL SYSTEM

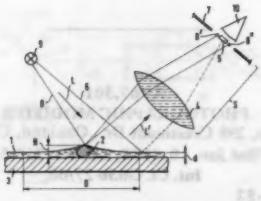
Fred Mast, Zuzwil/Sg; Renato Rossi, Zurich; Ulrich La Roche, Zurich, and Jean A. Knus, Zurich, all of Switzerland, assignors to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Feb. 9, 1972, Ser. No. 224,721

Claims priority, application Switzerland, Feb. 17, 1971, 2314/71

Int. Cl. G01n *15/02, 21/46*

U.S. Cl. 356—102 **16 Claims**



A method and apparatus for detecting and measuring the number and/or size of dust particles on a support plate having

a planar surface. The method comprising flowing a liquid layer over the support to wet the particles and controlling the layer thickness so that particles form deformations in the layer surface due to surface tension of the liquid and then measuring,by means of a Schlieren or phase contrast optical system, the amount of light scattered by those particles causing the deformations. The measured intensity is then compared with calibration curves derived empirically from measurements of dust particles of known size embedded in liquid layers of different known thicknesses to determine the number and/or size of the particles under measurement. The apparatus comprises a dust proof chamber into which the support plate with the particles embedded in a liquid layer is introduced, the chamber including a light source for illuminating the liquid layer and a Schlieren optical system for measuring the light scattered from the particles. The optical system includes a photoelectric transducer which is connected to an evaluation system not forming part of the housing to provide an indication of the number and/or size of the particles under measurement.

3,767,307

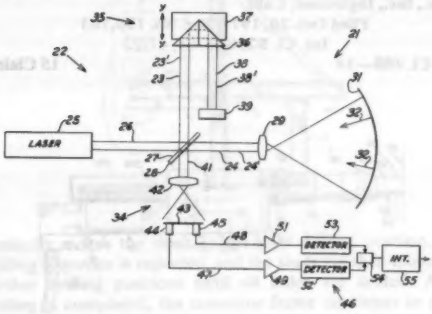
REAL TIME INTERFEROMETER

John Kent Bowker, Marblehead, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Aug. 30, 1971, Ser. No. 178,522

Int. Cl. G01b *9/02*

U.S. Cl. 356—109 **17 Claims**



Disclosed is a laser unequal pathlength interferometer for measuring mirror surface figures. Test and reference beams of different wavelengths are used in conjunction with detection apparatus that is responsive to a beat frequency resulting from the combination of the test and reference beams. In a preferred embodiment a single beam is split to provide test and reference beams and a relative Doppler shift is imposed therebetween. An heterodyne circuit in the detection apparatus replaces the beat frequency with a stable carrier frequency before final analysis.

3,767,308

METHOD AND APPARATUS FOR SENSING SURFACE DISPLACEMENT ORTHOGONAL TO THE LINE OF SIGHT

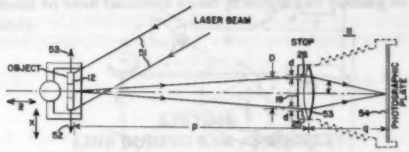
Donald E. Duffy, Syracuse, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Jan. 12, 1972, Ser. No. 217,360

Int. Cl. G01b *9/02*

U.S. Cl. 356—109 **10 Claims**

A novel method and apparatus for sensing surface displacement of an object orthogonal to the line of sight is described. The object is illuminated from a single laser source and imaged by a common lens using two laterally displaced apertures. Two successive images are obtained in this manner and are superimposed. The displacement is displayed as a pattern of moire' fringes or bands over the image. Increasing the



moire' contrast is achieved by spatial filtering. The invention has application to measuring object displacement or distortion under both static and vibratory conditions.

3,767,309

VISUAL SURFACE GUIDANCE APPARATUS

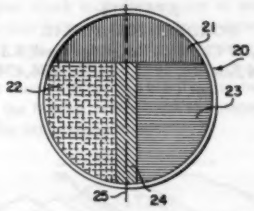
Albert D. Brown, Atlanta, and William R. Tygart, Marietta, both of Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Division of Ser. No. 703,589, Feb. 7, 1968, Pat. No. 3,599,143.

This application July 22, 1970, Ser. No. 63,981

Int. Cl. G01b *11/26*

U.S. Cl. 356—138 **3 Claims**



Guidance apparatus providing lateral and longitudinal visual guidance information to the operator of an aircraft or other vehicle to facilitate vehicular surface maneuvering. A light projection apparatus and a filter provide several multicolor laterally disposed beam segments to provide course guidance and also provide a longitudinal guidance beam portion positioned either above or below the laterally disposed segments to be undershot or overshot by the line of vision of the vehicle operator.

3,767,310

DIFFRACTION GRATING BEAM SPLITTER

LeRoy David Dickson, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 23, 1972, Ser. No. 265,847

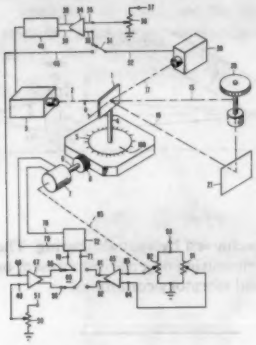
Int. Cl. G01j *1/42*; **G02b** *27/00*

U.S. Cl. 356—218 **10 Claims**

The optical system divides a beam of coherent radiation into a pair of beams having powers according to a desired ratio. The primary beam is intercepted by a holographic diffraction grating positioned at approximately the Bragg angle, placing virtually all the diffracted energy into the 0th and the selected one of either the +1st or −1st diffraction orders.

The ratio of the power of the 0th order to selected one of the +1st or −1st diffraction order is varied by changing the angle of the grating with respect to the primary beam. The

ratio can be set by calibrating the angle of the grating in terms of the split ratio or by monitoring the power of the unselected



one of the +1st or −1st diffraction order. The output signal from the power monitor in the unselected order can also be used to control the power of the primary beam.

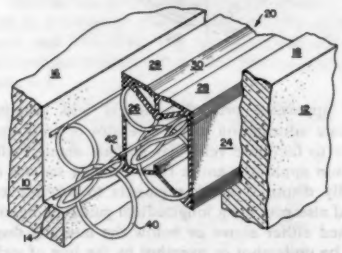
ERRATA

For Classes 403—344, 403—73 and 403—171 see: Patents Nos. 3,767,235 thru 3,767,237

3,767,311
ROADBED JOINT SEAL

Robert Lee Pare, 27 Chiswick Rd., Edgewood, R.I.

Filed June 26, 1972, Ser. No. 266,471
Int. Cl. E01c *11/10*
U.S. Cl. 404—67 8 Claims



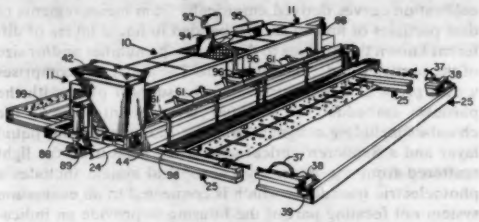
An elastomer joint seal for modular, slab-like construction elements such as pavements, roads, walls and the like. The seal is an elongated parallel-piped and is placed between facing edges of adjacent modular elements. Crossed spring elements run longitudinally of the seal and define an X-configuration in cross-section. Upon movement of the modular sections relative to each other, the spring elements undergo deformation in their respective planes.

3,767,312
APPARATUS FOR MAKING CONCRETE SLABS

Charles B. Raymond, 2670 Lombardy Ln., Dallas, Tex., and Bernard L. Just, 1006 Tower Dr., Cedar Hills, Tex.

Filed Nov. 28, 1969, Ser. No. 880,790
Int. Cl. E01c *19/12*
U.S. Cl. 404—106 15 Claims

A method and apparatus for making concrete slabs for use as building walls and other purposes. The slabs have a textured surface formed by partially embedding a multiplicity of elements in a shallow layer of fine granulated material supported in the bottom of the slab form. The slab making apparatus comprises a self contained, self powered machine movable along the edges of the form and having conveyor means oeera-

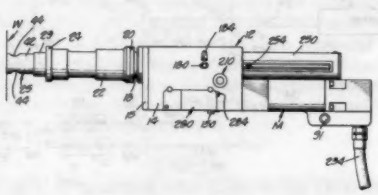


ble to distribute concrete mix gradually onto the layer of textured aggregate without disturbing the latter and while compacting and smoothing the top surface of the slab with a vibrating flat plate flush with the upper edge of the slab form. All necessary power is generated on board the apparatus.

3,767,313
POSITIVE FEED DRILL

Luis A. Bohoroquez, Inglewood, and Pierre G. Vindez, Redondo Beach, both of Calif., assignors to Zephyr Manufacturing Co., Inc., Inglewood, Calif.

Filed Oct. 20, 1971, Ser. No. 190,763
Int. Cl. B23b *45/04*, *47/22*
U.S. Cl. 408—14 15 Claims



A portable positive feed drilling device in which the drill spindle is automatically advanced and retracted, having a work surface sensing mechanism which cooperates with an adjustable spindle stop carried by the spindle for precisely arresting the forward travel of the spindle at a predetermined point relative to the surface of the work. After the spindle advance is stopped, the spindle feed and driving mechanism allow the spindle to dwell for a few turns and then automatically retract. A rapid spindle advance system is provided for rapidly advancing the spindle into proximity with the work prior to the start of a drilling operation.

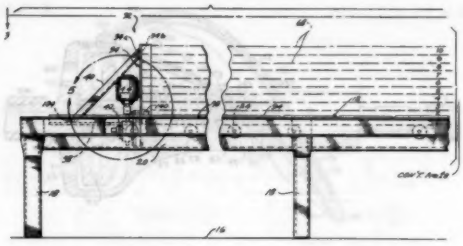
3,767,314
APPARATUS FOR PRE-DRILLING HOLES IN STUDS AND BLOCKING

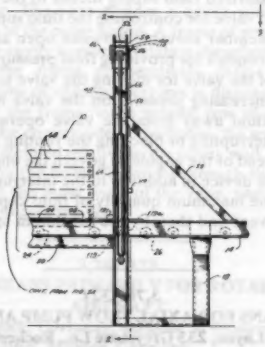
Charles E. Wirch, 1366 E. Palm, Altadena, Calif.

Filed Nov. 18, 1971, Ser. No. 200,074
Int. Cl. B23b *39/18*, *39/24*
U.S. Cl. 408—50 11 Claims

Holes are pre-drilled in a stack of beams which are thereafter used as blocking or studs in the construction of building wall frames. The holes provide means for quickly routing electrical conduits through the wall frames. A machine for pre-drilling the holes includes a work support bed for holding several adjacent stacks of baled studs, and a mova-

ble drill carriage above the bed for mounting several laterally spaced apart power drills. A longitudinally movable conveyor frame pushes the studs lengthwise on the bed until a cam carried by the frame actuates a switch to automatically stop the studs under the drill carriage in a first drilling position. The drill carriage then automatically moves down to drill holes in the studs, and then automatically moves up to its initial position after drilling is completed. The conveyor frame then auto-





matically moves the studs to the next drilling position, the drilling sequence is repeated, and the studs are then moved to further drilling positions until all holes are drilled. After drilling is completed, the conveyor frame continues to push the baled studs forward onto a suitable out-feed conveyor after which the studs may be cut into blocking. The conveyor frame then automatically returns to its original position ready to move another bale of studs.

3,767,315

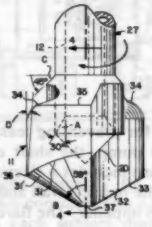
FLUID ASSISTED DRILL CONSTRUCTION

Daniel S. Burks, 13511 Bartlett St., Rockville, Md.

Filed Dec. 30, 1971, Ser. No. 214,043

Int. Cl. B23b *51/06*

U.S. Cl. 408—59 28 Claims



A deep hole drill construction having a pointbody, the shank of the drill consisting of a tubular shaft, the open end of which communicates with relieved areas on said pointbody through which coolant may be pumped by either forcing it down into the tube and evacuating it up through the annulus generated between the hole and the drill shank or by pumping it thorugh said annulus and evacuating it through the tube or drill shank to both facilitate swarf removal and cooling of the pointbody.

3,767,316

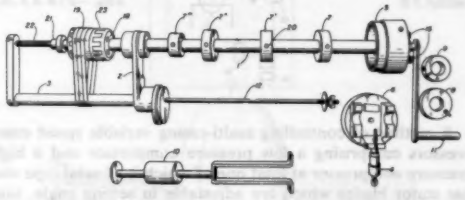
LINE BORING BAR ASSEMBLY

Walter M. Dumont, Jr., 2919 Williams St., Muskogee, Okla.

Filed Sept. 20, 1972, Ser. No. 290,540

Int. Cl. B23b *41/12*

U.S. Cl. 408—79 7 Claims



Apparatus for line boring the bearing surfaces in an automobile engine block including means to accurately mount the said apparatus onto an engine block, means to accurately bore the main and reface the thrust bearing surfaces; automatic planetary transmission means for screw feeding the cutting heads mounted on the line boring bar at a constant speed during the boring, and means to rotate the said boring bar carrying the said cutting heads.

3,767,317

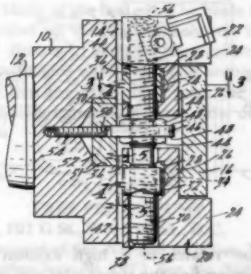
DOUBLE BLADED CUTTING TOOL

Robert M. Ortlieb, Southfield, Mich., assignor to Devlieg Machine Company, Royal Oak, Mich.

Filed Nov. 8, 1971, Ser. No. 196,519

Int. Cl. B23b *29/034*

U.S. Cl. 408—183 2 Claims

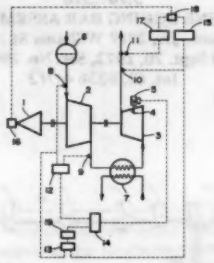


A double bladed cutting tool in which two cutter supports are positioned at the oposite ends of a transverse guideway formed in a rotary tool body. A single adjusting screw has two threads of opposite direction threaded through the cutter supports. Depending upon the direction of rotation of the screw, the cutter supports are either advanced outwardly or withdrawn inwardly in the guideway.

3,767,318
METHOD OF CONTROLLING MULTI-CASING VARIABLE SPEED COMPRESSORS

Takeshi Shirato, and Toshiyuki Ogishi, both of Okayama, Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., Tokyo, Japan

Filed Mar. 13, 1972, Ser. No. 234,233
Claims priority, application Japan, May 10, 1971, 46/31337
Int. Cl. F01d *21/00*
U.S. Cl. 415—1 6 Claims

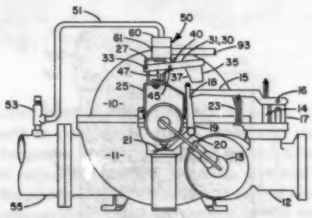


A method of controlling multi-casing variable speed compressors comprising a low pressure compressor and a high pressure compressor at least one of which is of axial type and has stator blades which are adjustable in setting angle, said method includes steps of measuring the pressure rise in one compressor and the total pressure rise in both said high pressure and low pressure compressors, adjusting the setting angle of the stator blades in accordance with the ratio of the pressure rise in said one compressor to the total pressure rise so as to obtain a predetermined share of pressure rise in said one compressor, and controlling the speed of the compressors in accordance with the output pressure or air flow in the compressor.

3,767,319
HIGH EXHAUST PRESSURE TRIP MECHANISM FOR TURBINES

Charles C. Czuszak, Greensburgh, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Apr. 3, 1972, Ser. No. 240,719
Int. Cl. F01b *25/00*
U.S. Cl. 415—17 6 Claims

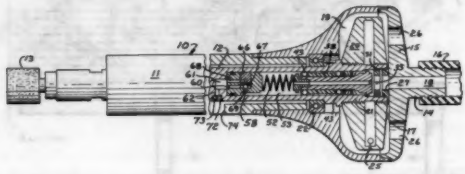


The invention relates to a high exhaust pressure trip mechanism for operating the steam inlet trip valve of a steam turbine. The exhaust area of the turbine is equipped with a relief valve, the outlet of which is connected to a cylinder. When the exhaust reaches a predetermined pressure, a piston in the cylinder is moved inwardly to move a latch out of latching position with the trip valve mechanism. When the piston has completed its inward stroke, the steam pressure in the cylinder is exhausted to a discharge passage to prevent excessive pressure build-up at the outer end of the piston.

3,767,320
VARIABLE SPEED GOVERNOR

James V. Theis, Jr., Delray Beach, and Lynn M. Davis, Boca Raton, both of Fla., assignors to Hollymatic Corporation, Park Forest, Ill.

Continuation-in-part of Ser. No. 167,644,, July 30, 1971, Pat. No. 3,708,240. This application Feb. 4, 1972, Ser. No. 223,429
Int. Cl. F01b *25/06*
U.S. Cl. 415—36 10 Claims

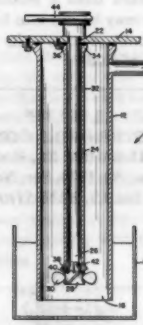


A variable speed governor for a pressurized fluid engine having a pressurized fluid supply means to the engine, a pressure operated valve for controlling the fluid supply and including a valve member movable between open and closed positions, a fluid conduit for providing fluid pressure to the operating portion of the valve for moving the valve toward its closed position on increasing pressure on the valve member, a vent for venting fluid away from the valve operating portion, a device for interrupting or blocking the venting as a function of increasing speed of the engine to govern the engine speed, and a flow control device in addition to the interrupting means for controlling the maximum quantity of fluid capable of flowing through the vent and thereby the maximum speed of the engine.

3,767,321
SEAL MEANS FOR AXIAL FLOW PUMP AND THE LIKE

Ronald Paul Layne, 233 Greystone Ln., Rochester, N.Y.

Filed May 26, 1972, Ser. No. 257,387
Int. Cl. F01d *11/00*
U.S. Cl. 415—110 5 Claims



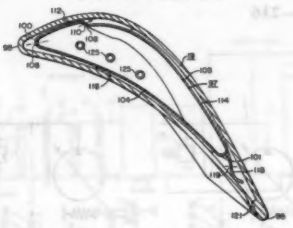
Disclosed is means for preventing leakage from about the shaft of an axial flow pump, the shaft extending through a housing wall. The means includes a sleeve for the shaft which is fixed at one end to the housing wall and is flared at its other end adjacent the pump impeller. The flared end forms a housing for a centrifugal pump rotor on the shaft, the centrifugal pump rotor being arranged to pump counter to the axial flow pump to prevent liquid from rising in the sleeve and leaking from about the shaft.

3,767,322

INTERNAL COOLING FOR TURBINE VANES

George A. Durgin, Claymont, Del., and Philip S. Barnabei, Medford, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 30, 1971, Ser. No. 167,586
Int. Cl. F01d 5/08
U.S. Cl. 416—97 4 Claims



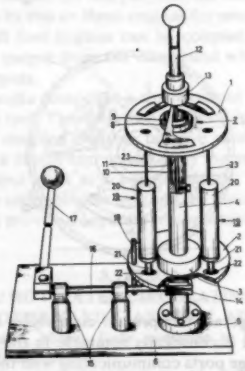
A structure for internally cooling an airfoil vane in an axial flow gas turbine. The vane defines a cavity which approximates the shape of the outer airfoil. A frame of similar shape is inserted into the cavity in spaced relation therefrom. The cavity walls and the frame cooperatively define a cooling passageway. A row of oblong apertures is disposed along the leading edge of the frame and a second row of apertures is disposed along the convex side of the frame, the second row of apertures being inclined relative to the cavity wall. Pressurized cooling air enters the frame, is forced through the apertures, impinges against the inner walls of the vane, and flows along the passageway to cool the vane.

3,767,323

CONTROL MEANS PRIMARILY FOR ROTARY-WING AIRCRAFT

Hans Zech, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed June 21, 1972, Ser. No. 264,900
Int. Cl. B64c 27/74
U.S. Cl. 416—98 4 Claims



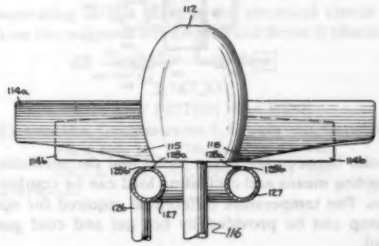
Blade control means primarily for rotary-wing aircraft. There are provided two control plates coaxially positioned on a common axis and each subject directly or indirectly to manual control. A first thereof is arranged for universal movement about a substantially fixed center located in said axis and the other thereof is arranged for movement in and along said axis at a substantially fixed orientation, usually normal, to said axis. At least three or more voltage changing devices operable in response directly to linear motion are arranged between said plates and positioned at equal angular spacing therearound. The output of said voltage changing devices is then conducted to means for controlling servomotors which in a conventional manner control the blade angle of the wings of said rotary-winged aircraft.

3,767,324

FAN APPARATUS

David B. Ericson, 625 S. Broadway, Nyack; Goesta Wollin, Snedens Landing, Palisades, and Roger L. Zaunere, 62 N. Greenbush Rd., W. Nyack, all of N.Y.

Division of Ser. No. 834,225, June 11, 1969, Pat. No. 3,610,527, which is a continuation of Ser. No. 741,512, July 1, 1968, abandoned. This application Sept. 2, 1971, Ser. No. 177,271
Int. Cl. F04d 13/12
U.S. Cl. 416—201 6 Claims



An improved axial-flow unshrouded type of fan suitable for atomizing streams of liquid impinging on the leading edges of the rotating blades near the hub includes a first set of many equally spaced blades and a second set of an equal number of shorter blades alternating with and approximately equally spaced between the blades of the first set. Each blade of the first set has a ratio of blade length to chord length (aspect ratio) such that a liquid stream impinging on the leading edge near the hub will spread out across the blade for substantially even distribution in atomized form from the entire length of the trailing edge. The two blade sets are arranged axially so that the swept path of the first set substantially overlaps the swept path of the second set, but at least a portion of each blade of the second set extends upstream of a corresponding portion of each blade of the first set. The blade length of each blade of the second set is sufficiently shorter than the balde lengths of the first set, and the circumferential spacing between adjacent blades of the first and second sets is sufficiently close so that the flow of air from the second set of blades approximately cancels the back flow of air from the first set of blades.

3,767,325

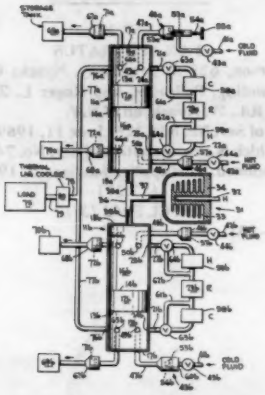
FREE PISTON PUMP

Mark Schuman, 101 G St., S.W., Wash., D.C.

Continuation-in-part of Ser. No. 205,651, Dec. 7, 1971. This application June 20, 1972, Ser. No. 264,483
Int. Cl. F04b 19/24; F03g 7/06
U.S. Cl. 417—207 24 Claims

A thermally driven pump for pumping fluids or driving a load includes a free piston oscillating in a cylinder. A coasting region for the piston is provided by means of a bypass having displaced ports in the cylinder walls. The bypass includes a thermal regenerator. A fluid to be pumped is introduced into the cylinder through a check valve, biased to be open in response to the pressure in the cylinder being less than the

pressure of the source of fluid. Closing of the check valve is delayed until the piston is wholly within the coasting region on its rebound stroke toward the coasting region. Efficiency of the device can be improved when driving an oscillating load, such as a free piston linear alternator, by providing a thermal



lag cooler between the pump outlet and the oscillating load. The cooling means and oscillating load can be combined as a bellows. The temperature differential required for operating the pump can be provided by hot gas and cold gas being pumped.

3,767,326

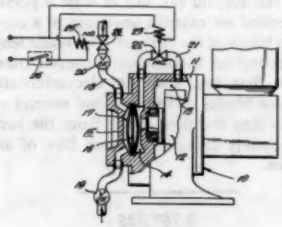
VOLUMETRIC FLOW CONTROL SYSTEM FOR PUMPS

Heinz K. Hetz, Doylestown, Pa., assignor to Yarway Corporation, Blue Bell, Pa.

Filed Aug. 4, 1972, Ser. No. 277,852

Int. Cl. F04b *49/02, 49/06, 9/10*

U.S. Cl. 417—214 **10 Claims**



A control system for controlling the total volume of fluid dispensed at intermittent intervals from a continuously operating pump such as a piston operated diaphragm pump is disclosed. A valved bypass line is provided to bypass fluid from the working fluid chamber of the diaphragm pump back to the piston pump reservoir to selectively permit the working fluid to either actuate the diaphragm pump or return to the piston pump reservoir, depending on whether the bypass valve is open or closed. The bypass valve is operated by a control circuit which may be preset to accurately control the amount of fluid dispensed during each cycle of operation.

3,767,327

POWER CONTROL DEVICE FOR TWO OR MORE HYDRAULIC PUMPS

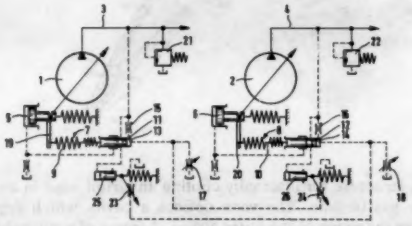
Ludwig Wagensell, Vohringen, Germany, assignor to Hydromatik GmbH, Ulm/Donau, Germany

Filed July 27, 1971, Ser. No. 166,389

Claims priority, application Germany, Aug. 5, 1970, P 20 38 968.8

Int. Cl. F04b *49/00*

U.S. Cl. 417—216 **4 Claims**



A power control device for two or more adjustable hydraulic pumps operated by a common driving means with each pump having its own power regulator and a power control device for continuously adjusting the regulator to maintain a desired power value of the pump. A pressure-responsive device on each pump is responsive to the delivery pressure of the companion pump for adjusting its own power according to the said delivery pressure.

3,767,328

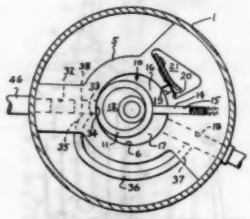
ROTARY COMPRESSOR WITH CAPACITY MODULATION

William T. Ladusaw, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed July 19, 1972, Ser. No. 273,117

Int. Cl. F04b *49/08*

U.S. Cl. 417—310 **4 Claims**



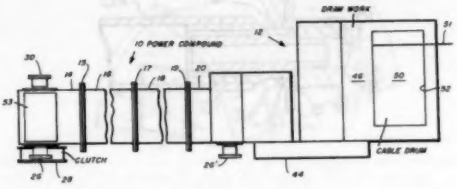
A rotary refrigerant compressor comprising a compression cylinder, a rotor eccentrically rotatable in the cylinder, suction and discharge ports communicating with the cylinder and a vane slidably mounted in a slot in the cylinder wall between the ports dividing the cylinder into high and low pressure sides includes means for modulating the compressor capacity. The modulation means comprises a bore communicating with the cylinder at a point intermediate the suction and discharge ports and having a modulating port on a side wall of the bore connected to the suction port. The modulating port is opened or closed by means of a plunger slidably mounted in the bore to modulate the compressor capacity.

3,767,329

DEEP DRILLING MACHINE DEMOUNTABLE FOR HELICOPTER TRANSPORT

Theodore B. Houck, Tulsa, Okla., assignor to Parker Drilling Company, Inc., Tulsa, Okla.

Filed Nov. 1, 1971, Ser. No. 194,182
Int. Cl. F04b *17/00, 35/00*
U.S. Cl. 417—360 3 Claims



This invention is directed to a deep bore hole drilling machine which is designed for portability so that each part of the system can be broken down into subassembly units which are of less than 4,000 pounds total weight. Thus, the entire drilling system can be transported by helicopters which are capable of carrying a total weight of 4,000 pounds.

The critical design of such a system comes in two areas; namely, in the power compound and in the drawworks. One of the principle elements of the invention involves the use of only two speed changes in the drawworks with all other speed changes taking place at the high speed of the engine by means of four-speed, step-down, transmission units between the engine and the power compound. This gives great fixibility in speed control, but with reduced total weight due to the fact that at high speeds the multiple speed gearing can be taken care of with much lighter apparatus.

Four engines are used, each of which is tied to a drive subassembly, the four of which are coupled together to provide a total drive compound. Each drive subassembly includes an engine, a transmission, internal drive means for coupling all engines together. In three of the drive assemblies the engine shaft is connected through a clutch to a pump. Means are provided to divide the three pumps into two groups, one pump driven by one engine for one purpose, the other two remaining pumps driven by two or three engines for another purpose. Alternatively, all four engines can be coupled together to provide a power output from the compound which is the sum of all engine outputs.

The drawworks comprises a single output shaft, which carries the cable reel. There are two separate input shafts, which are normally coupled together to drive as a unit. Each input shaft carries a clutch and sprocket by means of which it can drive the output shaft at a selected speed. The output shaft forms a single transportable unit and the input shafts with their clutches each provide a separate transportable unit.

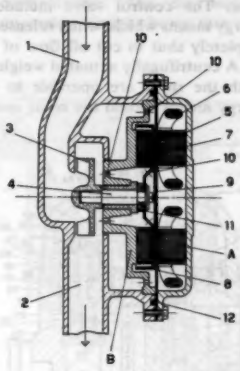
3,767,330

ELECTRIC HOT WATER CIRCULATING PUMP WITH MOTOR HAVING AN AXIAL AIR GAP

Marco Signorile, Milan, Italy, assignor to Ercole Marelli & C.S.p.A., Rome, Italy

Filed Aug. 20, 1971, Ser. No. 173,362
Claims priority, application Italy, June 5, 1971, 25471 A/71; Apr. 28, 1970, 29121 A/70
Int. Cl. F04b *35/00*
U.S. Cl. 417—420 7 Claims

In an electric pump used for the circulation of hot water the inductor of the moor is formed by a stator of the front type and the armature consists of a fixed magnetic part and a movable disc of material having a high conductivity keyed onto the end of the shaft, onto the opposite end of which the pump impeller is keyed.



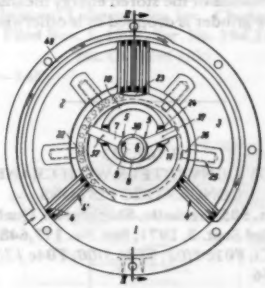
By separating in this manner the electrical circuit of the rotor from the magnetic circuit the axial thrust is eliminated.

3,767,331

ROTARY PISTON MACHINE

Erich Klesatschke, Goethestrasse 4, Gerabronn, Germany

Filed July 16, 1970, Ser. No. 55,342
Int. Cl. F01c *1/00*; F04c *1/00, 17/00*
U.S. Cl. 418—37 3 Claims



A rotary piston device in which two pistons are mounted in an annular chamber for unidirectional movement therein while moving relatively to each other. Radial elements connected to the piston are journaled on a common axis coinciding with the central axis of the annular chamber and a control member eccentric to the axis nonrotatively but radially slidably engages the radial elements and thereby effects positive control of the relative movement of the pistons during unidirectional movement thereof in the chamber. Fluid passages provide for the supply and removal of fluid from between the opposed ends of the pistons.

3,767,332

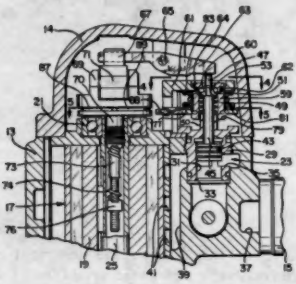
SPEED CONTROL AND CUT-OFF DEVICE

John L. Wickham, Glen Arm; Albert G. Wordsworth, Baltimore, and David E. Huffaker, Towson, all of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed Aug. 16, 1971, Ser. No. 172,026
Int. Cl. F01c *21/12*; F04c *15/02, 29/08*
U.S. Cl. 418—43 10 Claims

A powered rotary grinder including a vane-type fluid motor having a rotor supported within a housing. Pressurized fluid is

admitted to the motor through a control valve to drive the rotor. A pivoted lever is engageable with the control valve and is actuated by flyweights attached to the rotor to regulate the speed of the rotor. The control valve includes normally latched, stored energy means which, when released, slams the control valve completely shut to cut off flow of pressurized fluid to the motor. A centrifugally actuated weight or weights interconnected with the rotor are operable to release the latched stored energy means should the rotor overspeed and



the regulator fail to operate. In one embodiment, the weights include interengaged means which require that all the weights move radially outwardly of the rotor conjointly to effect release of the latched, stored energy means. This interengaged means insures that only centrifugal force can move the weights and that they cannot accidentally or unintentionally move to effect release of the stored energy means in the event, for example, the grinder is dropped or is otherwise struck with a sharp blow.

3,767,333

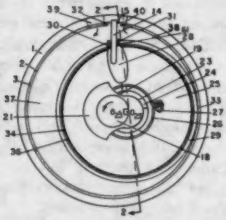
ENERGY CONVERTERS WITH CRANKPIN CONCENTRIC PISTONS

Baruir Ashikian, 505 Frechette, Sherbrooke, Quebec, Canada

Filed Sept. 3, 1971, Ser. No. 177,648

Int. Cl. F01c *1/02*; F03c *3/00*; F04c *17/02*

U.S. Cl. 418—56 **9 Claims**



A crankpin concentric piston moves within a cylindrical bore having two end covers, fluid admission and discharge ports and a radial blade fixed between these ports. The piston, consisting of an elastic cylinder embracing the radial blade, is conveniently preloaded against the cylinder's inner wall, along a contact line dividing the space between the cylinder, the piston, the end plates and the radial blade in two chambers, which admit and expel the fluid as the crankshaft is rotated. The piston's elastic preloading against the cylinder wall and the radial blade, and special end seals ensure automatic compensation for wear and thermal expansion.

3,767,334

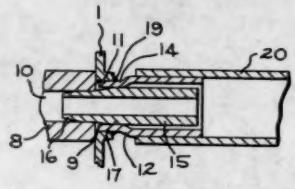
HERMETICALLY SEALED COMPRESSOR ASSEMBLY

Dean C. Rinehart, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed July 28, 1972, Ser. No. 275,945

Int. Cl. F04b *17/00*

U.S. Cl. 418—248 **3 Claims**



A hermetic compressor unit comprising a hermetic casing containing a compressor including a cylindrical block having an arcuate surface engaging the inner surface of the casing and a suction tube assembly for connecting the compressor to a refrigeration system. The suction tube assembly comprises a tubular aluminum connector having a reduced end portion extending into a flanged hole in the casing and communicating with a suction passage in the block. A tubular fitting includes an end portion press fit into the passage and a shoulder portion press fit into the reduced end portion of the connector.

3,767,335

VANE FOR ROTARY FLUID MACHINE

Leo Kramer, Skillman, N.J., and Harold E. Harris, Jr., Athens, Pa., assignors to Ingersoll-Rand Corporation, New York, N.Y.

Filed Sept. 8, 1971, Ser. No. 178,622

Int. Cl. F01c *21/00*; F03c *3/00*; F04c *29/00*

U.S. Cl. 418—259 **9 Claims**

A vane for a vane-type rotary air motor having an increased thickness or projecting abutments located along its inner edge to prevent it from seating flatly and in intimate contact with the wall of its slot to avoid any adherence or sticking of the vane against the slot wall that would interfere with the sliding movement of the vane during the operation of the air motor.

3,767,336

APPARATUS FOR CONSTRUCTING BUILDING STRUCTURES

Robert J. Casey, 1959 Ashland Way, San Jose, Calif.

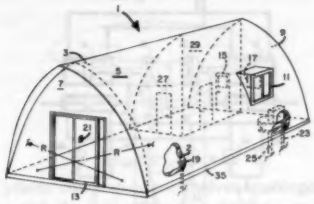
Filed Oct. 8, 1971, Ser. No. 187,806

Int. Cl. B29d *27/02*

U.S. Cl. 425—4 **13 Claims**

A method and apparatus for constructing building structures of various desired geometric patterns comprising the steps of establishing a mold controllable in successive steps along a path corresponding to the desired geometric pattern,

the mold having a surface shape corresponding to a segment of the desired geometric pattern; applying a building construction material in liquid or atomized form in abutment with said surface to which said building material solidifies to establish a segment of the building structure; temporarily retaining said mold in abutment with the applied construction material to



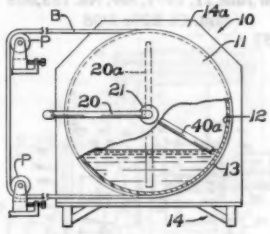
support the applied construction material for a time period sufficient to permit said applied material to solidify sufficiently to be self sustaining; and repositioning the mold in successive positions along the geometric pattern and adjacent to a previously cured segment and applying said building material in abutment with said mold at each position.

3,767,337

APPARATUS FOR CURING ENDLESS ELASTOMERIC BELTS

George Douglas V. Ritchie, Akron, Ohio, assignor to The B.F. Goodrich Company, New York, N.Y.

Filed Nov. 30, 1971, Ser. No. 203,208
Int. Cl. B29h 5/28
U.S. Cl. 425—28 B **7 Claims**



The belts to be cured are tensioned over the periphery of a drum which is steam heated and rotated in a vertical plane. The drum is partially filled with water to provide a chilled zone in the region where the belts leave the drum upon initiation of drum rotation. A rotatable liquid outlet is clutch-coupled to rotate with the drum for lowering the liquid level at a rate corresponding with the rate of movement of a point fixed on the rotating drum. The drum rotates at a rate such that an uncured portion of belting initially contacting the top of the bottom of the drum is completely cured as it leaves the drum.

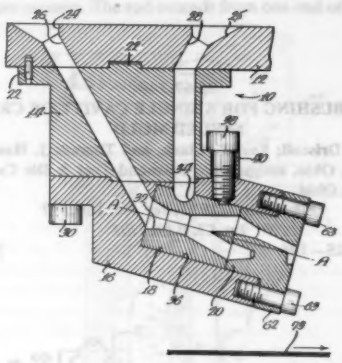
3,767,338

APPARATUS FOR PRODUCING OVERLAND EXTRUDATES

Clarence H. Soderlund, Battle Creek Township, and David F. Hathaway, Battle Creek, both of Mich., assignors to Kellogg Company, Battle Creek, Mich.

Filed Sept. 3, 1971, Ser. No. 177,663
Int. Cl. A23g 5/00; B29f 3/12
U.S. Cl. 425—131 **8 Claims**

Process and apparatus for making a novel food product by extruding a plurality of separate plastic strands of food material through a stationary die to produce a composite stick-like product wherein the strands are in an overlaid helical or "twisted" configuration. The die includes separate individually converging straight bores that conjointly converge



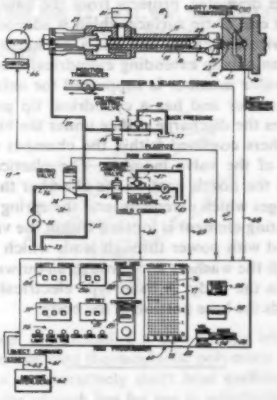
toward a common axis but are skewed or offset about said axis in the same direction so as to impart a helical configuration to the strand components of the composite extrudate. The strands may, for example, be of contrasting colors to impart a pleasant aesthetic affect to the final product.

3,767,339

INJECTION MOLDING CONTROL

Denes B. Hunkar, Cincinnati, Ohio, assignor to Hunkar Instrument Development Laboratories, Inc., Cincinnati, Ohio

Filed Nov. 1, 1971, Ser. No. 194,224
Int. Cl. B29f 1/06
U.S. Cl. 425—145 **14 Claims**



An injection molding control provides for the programmable control of ram velocity as a function of the position of the ram through closed-loop feedback of the measured actual velocity. Closed-loop feedback of the actual mold cavity pressure overrides the velocity program in an analog fashion to stop the ram when critical cavity pressure has been attained. A variable length ram stroke provides optimization of the shot size through automatic variation in response to the closed-loop feedback of ram position at the instant of the attaining of critical pressure in the previous injection cycle. The shot size control is used to maintain a constant cushion in each cycle as measured at the instant critical pressure is reached to insure constant product density and uniformity of shrinkage. Auto-

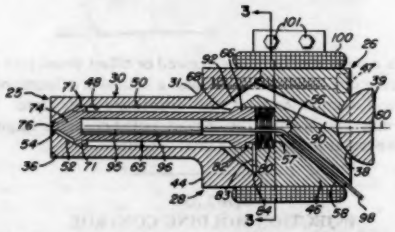
matic recompensation of the velocity program domain with respect to ram position relates the material injection rate more directly to the actual quantity material being injected. Adaption to factors such as material density and viscosity changes is realized.

3,767,340

SPRUE BUSHING FOR A SINGLE CAVITY OR CENTER SPRUED MOLD

James R. Driscoll; Earl E. Clark, and Thomas J. Haas, all of Dayton, Ohio, assignors to Diamond Tool & Die Company, Dayton, Ohio

Filed July 7, 1971, Ser. No. 160,317
Int. Cl. B29f *1/03*
U.S. Cl. 425—146 **7 Claims**



Plastics material is injected into a single cavity mold through a sprue bushing which has a cylindrical base portion with a semispherical seat within one end for receiving the nozzle of an injection molding machine. A cylindrical nose portion of smaller diameter, projects from the base portion and includes a flat end or tip surface which is adapted to be positioned flush with the cavity and has a discharge orifice connecting with an axially extending cylindrical chamber within the body. A valve member is supported for axial movement within the chamber and has a cylindrical tip portion which normally closes the discharge orifice under the bias of a series of spring washers confined within the chamber adjacent the opposite end of the valve member. The plastics material is directed from the nozzle seat to the chamber through a plurality of passages which extend around the spring washers. An elongated heating element is located within the valve member and is supplied with power through leads which extend rearwardly through the washers and through an outwardly extending hole within the body. A band type electrical heating element surrounds the base portion of the body.

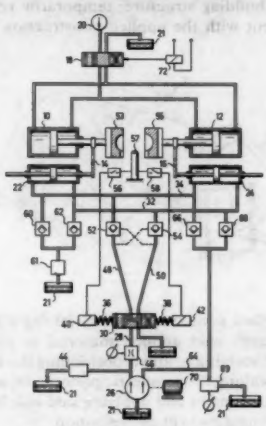
3,767,341

BLOW MOULDING MACHINE

Bernd Siebelhoff, Solingen, and Josef Senel, Bonn-Beuel, both of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Germany

Filed Apr. 8, 1971, Ser. No. 132,301
Int. Cl. B29d *23/03*
U.S. Cl. 425—150 **12 Claims**

In a moulding machine having a blow moulding nozzle and a closing and opening frame for mould parts, each activated by a hydraulic cylinder, the cylinders being hydraulically connected in parallel and a centering device being provided for the moulded parts. The centering device is capable of indicating the position of at least one of the mould parts relative to its intended position in its closed state. Also, the centering device



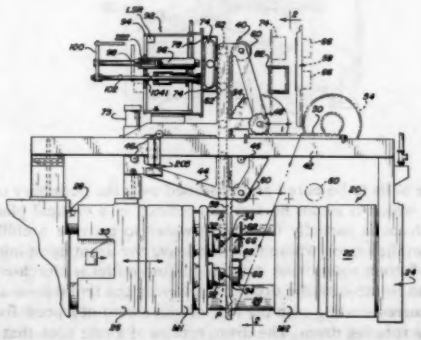
is capable of displacing each of the mould parts in the same direction as a function of such indicating position.

3,767,342

MOLDING APPARATUS WITH ARTICLE TRANSFER AND EJECTING MEANS

Terry C. Potter, Sylvania, and Roger R. Rhoads, Toledo, Ohio, assignors to Owens-Illinois Inc., Toledo, Ohio

Filed June 21, 1971, Ser. No. 155,005
Int. Cl. B29c *3/06*
U.S. Cl. 425—157 **9 Claims**



Article transfer apparatus for cyclically transferring articles from an article forming machine, such as a plastic injection molding machine, to an adjacent article receiving chute or conveyor system. The transfer apparatus is mechanically linked to and driven by relative movement of platens on the forming machine to positively interlock the forming and transfer mechanisms against interference with each other. A control system operated by mechanical elements of the transfer system is employed to control the application of pressure or vacuum to article handling elements of the system at appropriate points in the cycle to enable the elements to grip, release or convey the article being handled.

3,767,343

PYROHY MAKER

Harry Pichonsky, Box 221, Thorsby, Alberta, Canada

Filed Dec. 2, 1971, Ser. No. 203,981

Int. Cl. B29c 3/00

U.S. Cl. 425—218 1 Claim

A pair of plastic concavo-convex halves are hinged together on one edge with the perimeters engaging one another when closed to form cutting edges for trimming the dough. A T-shaped stem extends from one half and is engaged between the second and third fingers thus anchoring the device in the hand and enabling the entire forming operation to be accomplished with one hand.

3,767,344

APPARATUS FOR REPROCESSING PLASTIC SCRAP MATERIAL

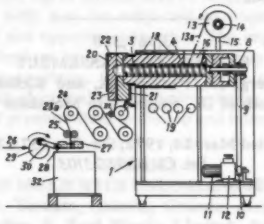
Zeno Wehrli, Hagglingen, Switzerland, assignor to Riwisa AG. Kunststoffwerke Hagglingen, Hagglingen, Switzerland

Filed Aug. 25, 1971, Ser. No. 174,804

Claims priority, application Switzerland, Sept. 15, 1970, 13688/70

Int. Cl. B29f 3/00

U.S. Cl. 425—308 12 Claims



A method and apparatus for reprocessing plastic scrap material wherein scrap material is extruded into a sheet by means of a worm-type extruder, the extruded sheet being cooled by a liquid-free cooling system which includes a number of cooling rollers over which the hot extruded material is passed to be cooled. Preferably, the hot extruded material contacts a substantial portion of the peripheral surface of a number of the cooling rollers to improve cooling efficiency. After cooling, the extruded sheet is granulated, preferably by a pair of relatively movable knives.

3,767,345

DOUBLE PARISON DIE HEAD CONTROL MECHANISM

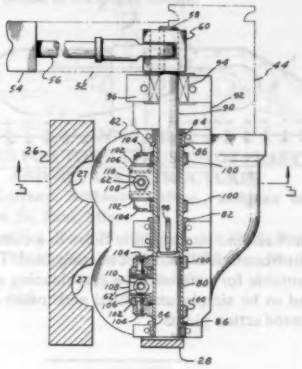
Robert L. Doughty, West Hartford, and Clayton A. Wheeler, Plainville, both of Conn., assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 3, 1972, Ser. No. 223,269

Int. Cl. B29c 1/00

U.S. Cl. 425—326 5 Claims

Torque equalizing mechanism for uniformly actuating the die cores of a double parison extrusion head on a vertical "wheel-type" blow-molding machine and uniformly varying the wall thickness of a pair of parisons simultaneously extruded from the head. A single programming means governs operation of the actuating mechanism. Die cores, extending upwardly from the double extrusion head, are engaged by rocker arms fixed on a rotatably mounted tubular shaft section of a composite shaft having a driver rod fixed internally thereof at a localized central attachment area equidistant from the die core centers. The rod extends from one end of the tube



and a crank arm on the outer end of the rod is pivotally linked to a control shaft movable in response to the single programming means. The composite tubular shaft arrangement applies motion to the die cores equally and requires a minimum of head space from a double parison die head, thus facilitating the conversion of existing single parison machine designs to double the output thereof.

3,767,346

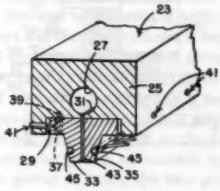
FILM EXTRUSION DIE

John A. Mihalik, Swarthmore, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed July 22, 1971, Ser. No. 165,173

Int. Cl. B29f 3/04

U.S. Cl. 425—378 7 Claims



An extrusion die including a pair of lips which together serve to shape a molten thermoplastic polymeric material into a film, with a comparatively short heat exchanger movably mounted on one of such lips for use in selectively varying the temperature at localized areas thereof.

3,767,347

MODULAR UNIT FOR THE SPINNING OF SYNTHETIC FIBERS

Giannino Landoni, Via Colombo 32, Cassano Magnago, Italy

Filed June 19, 1972, Ser. No. 263,775

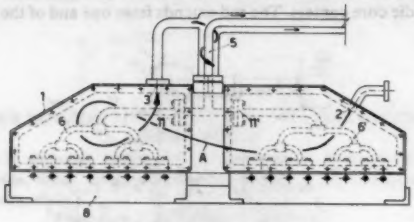
Claims priority, application Italy, June 19, 1971, 26078 A/71

Int. Cl. D01d 1/06

U.S. Cl. 425—379 5 Claims

A unit for spinning synthetic fibers comprises a metal housing including a central tube for the passage of the melt

polymer and communicating with a first heating fluid surrounding said tube. Two systems of tubes for the distribution of the polymer are separately connected to the central tube and two sets of four pumps, each set for each of two spinning



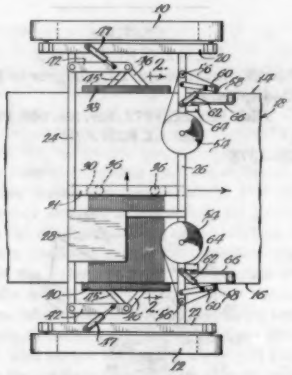
positions. A second heating fluid flows in a circuit which is independent from that of said first heating fluid. The unit is easily demountable for maintenance and cleaning operations and is adapted to be simply assembled with other identical units for higheproduction plants.

3,767,348

APPARATUS FOR GROOVING A CONCRETE SLAB

Glen E. Perkins, 1800 7th St., Rock Island, Ill.

Filed Dec. 27, 1971, Ser. No. 212,256
Int. Cl. B29d *7/22*
U.S. Cl. 425—385 **7 Claims**



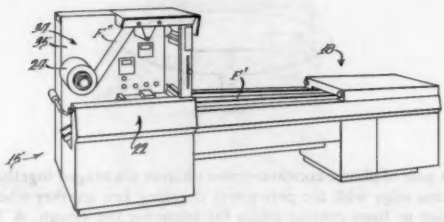
Concrete pavement is provided with transverse grooves in its surface by a forming device having projecting parallel ribs that are pressed into contact with a concrete slab while in plastic or formable state and moved along the slab surface between opposite edges thereof to form parallel grooves in the surface of the slab. Retractable support forms are provided at opposite edges of the concrete slab to support the slab during the grooving operation. The forms have grooved upper surfaces aligned with the top surface of the slab, and the grooves in said surfaces conform with the ribs on the groove forming device, thereby allowing the device to be drawn beyond the edge of the slab. In the alternative, the forms may have a resilient upper surface to accommodate the ribs of the grooving device. The apparatus may include a mechanism for moving the support forms into proper position against the edges of the slab with each pass of the grooving device, as well as a mechanism for laying a strip of plastic material between the forms and the slab to prevent adherence therebetween.

3,767,349

VACUUM PACKAGE MACHINE

Arthur D. Jezuit, Woodale, Ill., assignor to John Morrell & Co., Melrose Park, Ill.

Filed Sept. 24, 1971, Ser. No. 183,330
Int. Cl. B29c *17/04*
U.S. Cl. 425—387 **18 Claims**



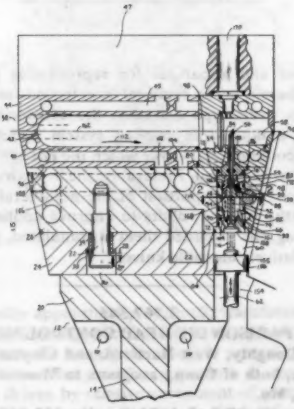
A packaging apparatus for applying and heat sealing a sheet of material to another sheet of material having a plurality of uniformly spaced food receiving recesses therein and thereafter cutting the sealed pockets into individual packages, there being provided a heating platen against which one of the sheets is blown to soften the sheet with a die positioned on the opposite side of the heating platen into which the softened sheet is drawn or forced to form the pocket in the sheet. One of the sheets is fed from a supply roll holder assembly defined by an axially movable slide on a spindle that permits alignment of the supply roll with an adjustable retaining ring on the slide to accommodate for varying width supply rolls. There is further provided a plurality of retaining clips for holding one of the sheets during manipulation, supported on a chain drive with the clips being opened by a plurality of overlapping rollers that converge on actuating elements on each of the clips to open the same.

3,767,350

BLOW NEEDLE ASSEMBLY

Charles Horberg, Jr., Northbrook, and Richard K. Shelby, Hinsdale, both of Ill., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 24, 1972, Ser. No. 237,622
Int. Cl. B29d *23/03*
U.S. Cl. 425—387 **25 Claims**



A compact blow needle assembly for a partible mold means extractable through the rear of the mold means in a direction away from the mold axis, which includes a detent mechanism within the mold means extending substantially perpendicular to the blow needle which is readily accessible from the exteri-

or thereof for releasably locking the assembly in place in a bore within the mold means. The mechanism is especially applicable where the mold means includes two or more side by side cavities for simultaneously blowing plural articles.

3,767,351

VIBRATORY GRANULATE COMPACTING APPARATUS FOR BLOCK MANUFACTURE

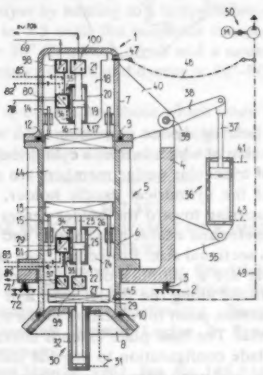
Harry Blaser, Oensingen, Switzerland, assignor to Von Roll A.G., Gerlafingen, Switzerland

Filed Oct. 13, 1971, Ser. No. 188,715

Claims priority, application Switzerland, Oct. 22, 1970, 15636/70; Nov. 9, 1970, 16671/70

Int. Cl. B28b *3/08*

U.S. Cl. 425—432 **19 Claims**



An essentially tubular shell has movable tops and bottoms, which are subjected to vibratory impacts in non-cyclically recurring pulses; top or bottom may be subjected to a constant pressure, or both may be subjected to impacts which are synchronized and opposite each other. The impact pulses are controllable both as to frequency (which may be zero), amplitude and wave shape, the impulses being preferably controlled from an electrical programming source which controls application of pressure fluid to the top and bottom.

3,767,352

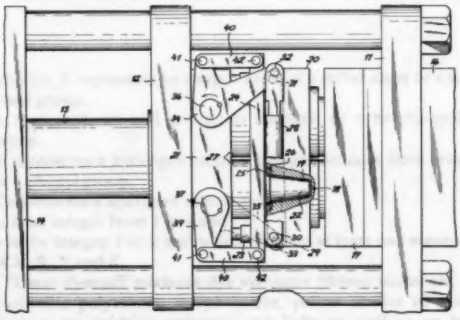
INJECTION MOLD WITH UNLOADING MECHANISM

Herbert Rees, Toronto, Ontario, Canada, assignor to Husky Manufacturing & Tool Works Limited, Bolton, Ontario, Canada

Filed July 12, 1971, Ser. No. 161,845

Int. Cl. B29f *1/14*

U.S. Cl. 425—441 **13 Claims**



Two pairs of lever arms, fulcrumed on one of two relatively movable mold portions, form part of an articulated linkage anchored to the other mold portion and connected with either a stripper plate between the two mold portions or an ejector plate behind the second mold portion. Upon the opening of the mold, the stripper or ejector plate moves relatively to the adjacent mold portion, in a direction discharging the molded articles from the mold cavities, at a rate substantially conforming to a Gaussian curve. The linkage may include a lost-motion coupling to hold the plate in an inoperative position during a terminal phase of a closure stroke.

3,767,353

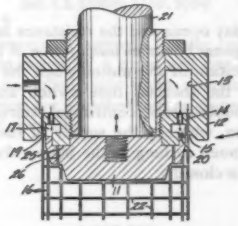
APPARATUS FOR THE EXTRUSION OF PLASTIC NET AND NET LIKE STRUCTURES

Bernard J. Gaffney, Stillwater, Minn., assignor to Conwed Corporation, St. Paul, Minn.

Division of Ser. No. 875,476, Nov. 10, 1969, Pat. No. 3,700,521. This application May 5, 1972, Ser. No. 250,490

Int. Cl. B29f *3/04*

U.S. Cl. 425—464 **5 Claims**



An improved extrusion apparatus and method for the extrusion of plastic net and net-like structures is provided. The apparatus is comprised of a plurality of die members at least one of which reciprocates in a vertical direction. One of the die members has a plurality of orifices therein for the extrusion of a first group of strands and at least one other die member has a forming surface thereon which coacts with a second forming surface on another die member to form a variable opening for the independent extrusion of a second group of strands. The distance between each orifice is maintained constant and the second group of strands is extruded at a point below that at which the orifices communicate with a polymer supply. The forming surfaces and orifices are so arranged relative to each other that at least one group of strands is forcefully urged toward the other group to cause the two groups of strands to weld together subsequent to extrusion.

3,767,354

OIL BURNER CONTROL SYSTEM

James A. Wright, Webster Groves, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

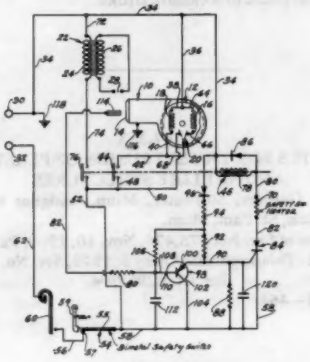
Filed Mar. 23, 1972, Ser. No. 237,415

Int. Cl. F23n *5/00*

U.S. Cl. 431—63 **7 Claims**

A control system for fluid fuel burners including electric motor means operative to supply fuel and combustion air to a burner comprises a first circuit including a relay and a thermal time switch resistance heater completed through a conducting

SCR and a space thermostat. A second circuit including the thermal time switch and a spark igniter, and a third circuit including the time switch, the electric motor windings, and a double-throw, centrifugal, motor starting switch in its start position are jointly completed through contacts of the relay when the thermostat closes. Means responsive to flame conduction cuts off SCR conduction when burner flame appears,



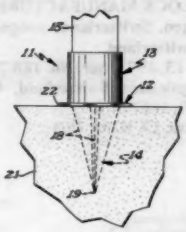
whereby the relay opens and the resistance heater is de-energized and the igniter becomes inoperative. A fourth circuit for continued operation of the motor when the relay opens extends through the thermal time switch and is completed through the double-throw, centrifugal, starting switch in its running position, whereby the supply of fuel and air to the burner is continued so long as the burner flame persists and the thermostat is closed.

3,767,355

CANDLE HOLDING DEVICE

David B. Anderson, Jr., 5526 Douglas Dr., Crystal, Minn.

Filed Jan. 6, 1972, Ser. No. 215,836
Int. Cl. F23d 3/16
U.S. Cl. 431—295 11 Claims



A candle holding device consisting of a supportive base plate the top side of which carries a cylindrical candle holder. A plurality of triangular wedge members are disposed on the inner face of the cylindrical candle holder, each having a blade edge tapering toward the holder center to decrease its effective diameter and enable it to receive and hold candles of varying cross sectional size. Projecting from the underside of the base plate are a plurality of triangular blade members commonly affixed along the holder axis, and which together taper to a common point for insertion into a thickness of supporting material. The base plate extends laterally beyond the holder and blade configuration to provide stabilizing support when inserted, and each base plate is frangibly connected to the base plate of at least one other candle holding device.

CHEMICAL

3,767,356
DYEING COTTON-POLYESTER TEXTILES WITH ONE-BATH MIXTURE OF DISPERSED AND CELLULOSE-REACTIVE DYESTUFF

James Thomas Turner, Hexagon House, Blackley, Manchester, England

Filed Nov. 12, 1971, Ser. No. 198,401

Claims priority, application Great Britain, Dec. 2, 1970, 57,303/70

Int. Cl. D06p *3/82*

U.S. Cl. 8—21 C **2 Claims**

A process for dyeing polyester-cellulose union materials in a single bath containing a mixture of disperse and specified cellulose-reactive dyes by heating to a temperature of 100°–140° C and pH 5.0 to 5.5 until the polyester component is dyed then cooling to 80° C, adding alkali and a neutral salt if the latter is not already present, and dyeing at 80°–90° C to fix the reactive dye.

The reactive dyes used are those which when dyed on cotton at 120° C for 45 minutes give an equal or only a marginally less depth of shade than a similar dyeing carried out at 80° C.

3,767,357
MIXTURE OF QUINOPHTHALONE DISPENSE DYESTUFFS

Ernst Spietschka, Oberauroff/Taunus; Friedrich Ische, Naurod/Taunus, and Hubert Kruse, Kelkheim/Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

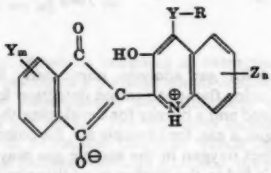
Filed May 20, 1971, Ser. No. 145,511

Claims priority, application Germany, May 23, 1970, P 20 25 288.4

Int. Cl. D06p *1/16*

U.S. Cl. 8—25 **6 Claims**

A mixture consisting of two dyestuffs in a ratio of from 10 : 90 and 90 : 10% by weight of the general formula



wherein X represents an oxygen atom of a sulfur atom or a sulfonyl group,
R represents an aryl group, an aliphatic or a hetero-cyclic group,
Y represents a hydrogen atom, a halogen atom, a nitro group or a phenyl group,
Z represents a hydrogen or halogen atom,
m is an integer from 1 to 4 and
n is the integer 1 or 2 and which differ in at least one meaning of X, R, Y and Z.

These dyestuff mixtures dye synthetic fibrous materials, in particular polyethene terephthalate, yellow shades of good fastness to washing, solvents and light as well as to hot processing and to thermofixation. They are especially useful for the dyeing of wound packages.

3,767,358
RHODAMINE DYE COMPOSITION

Harvey I. Stryker, Carney's Point, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 1, 1971, Ser. No. 177,173

Int. Cl. C09b *1/08*

U.S. Cl. 8—25 **4 Claims**

A liquid Rhodamine dye composition prepared by reacting a Rhodamine Base with a dialkyl sulfate or concentrated sulfuric acid and a saturated aliphatic glycol, polyaklylene glycol, or glycol monoalkyl ether at from about 100° to 160°C.

3,767,359
PROCESS FOR THE LIQUID AMMONIA TREATMENT OF YARNS

Timothy A. Calamari, Jr.; Wilson A. Reeves; Sidney P. Schreiber, and Albert S. Cooper, Jr., all of Matairie, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 7, 1971, Ser. No. 141,360

Int. Cl. D06m *1/10, 9/04*

U.S. Cl. 8—115.7 **6 Claims**

Yarns with improved strength, luster, elongation, and toughness are produced by a rapid and continuous process wherein singles and plied yarns which contain about 25 percent or more cotton are stretched before, during, and after immersion in liquid ammonia.

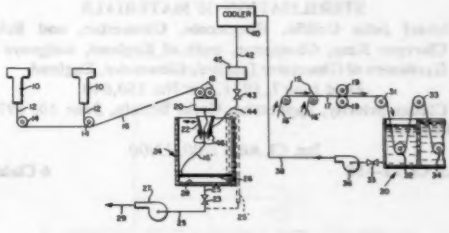
3,767,360
PROCESS FOR WASHING SOLVENT LADEN FILAMENTS

Prem Prakash Singh, Charlottesville, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 17, 1971, Ser. No. 199,595

Int. Cl. D01f *7/06*

U.S. Cl. 8—137.5 **4 Claims**



A method and apparatus for improving the extraction of solvent from a textile rope. Solvent-laden filaments emanating from a plurality of spinning cells are combined into a rope then while being piddled into a container through an oscillating spout, the rope is sprayed with cooled extraction liquor that has been obtained from the tank of a washdraw machine. Spray heads are attached to the oscillating piddler spout to provide uniform distribution of the liquor on the rope and a foraminous false bottom in the container with a means to drain the container of liquid increases the extraction efficiency of the system.

3,767,361

PROCESS FOR DYEING POLYACRYLONITRILE FIBERS WITH METHINE DYES

Robert Frederic Michel Sureau, Enghien Les Bains, and Victor Marie Dupre, Louvres, both of France, assignors to Ugine Kuhlmann, Paris, France

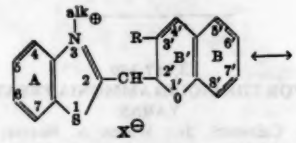
Division of Ser. No. 14,622, Feb. 26, 1970, abandoned. This application Sept. 16, 1971, Ser. No. 181,253

Claims priority, application France, Mar. 7, 1969, 690373

Int. Cl. D06p 3/76

U.S. Cl. 8—177 AB 7 Claims

A process for the colouration of fibres based on polymers or copolymers of acrylonitrile using dyes of the formula:



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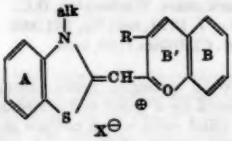


wherein alk represents an alkyl group possessing a small number of carbon atoms, the nucleus A is unsubstituted or substituted by at least one halogen atom, alkyl, alkoxy, nitro, amino or acylamino group or fused to a benzene nucleus, the nucleus B is unsubstituted or substituted by at least one halogen atom, alkyl, alkoxy or nitro group or fused to a benzene ring, R represents a hydrogen atom, an alkyl, nitrile, alkoxycarbonyl or phenyl group, the nucleus B′ may be fused to a benzene nucleus in the 3′,4′ position and X represents a monovalent anion, and fibres based on polymers or copolymers of acrylonitrile coloured by these dyes.

3,767,362

STERILISATION OF MATERIALS

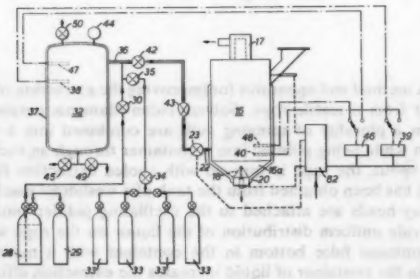
Michael John Griffin, Hucclecote, Gloucester, and Brian Clarence King, Gloucester, both of England, assignors to Gardeners of Gloucester Limited, Gloucester, England

Filed June 7, 1971, Ser. No. 150,640

Claims priority, application Great Britain, June 10, 1970, 28,010/70

Int. Cl. A61l 1/00, 13/00

U.S. Cl. 21—58 6 Claims



A method of sterilising powders and other fine-grained pulverulent or granular materials employs a gaseous sterilising agent. An upwardly extending closed treatment chamber is partially filled with the material to be sterilised, and the gaseous sterilising agent is admitted to the lower end of the chamber in such manner that the material is flung upwardly into free space at the top of the chamber and substantially allowed to settle again whereafter the process is repeated. Thus, the material is displaced by the sterilising agent and allowed to settle and stand again, or at any rate to complete its settling movement at least to a fluid state, several times. The sterilising agent escapes from an outlet at the top of the chamber, and it is desirably admitted to the latter in a series of pressure shocks of short duration, and in such manner that the material is whirled upwardly by the shock pulses in an ascending peripheral vortex so that the particles are in a state of suspension from which they fall downwards again in an inner vortex axially of the chamber.

3,767,363

FLAME IONIZATION DETECTION

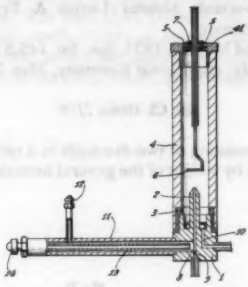
Kurt Hofmann, Hergershausen, Germany, assignor to Hartmann & Braun A.G., Mess-und Regeltechnik, Frankfurt/Main, Germany

Filed Aug. 2, 1971, Ser. No. 167,997

Claims priority, application Germany, Aug. 6, 1970, P 20 39 092.5

Int. Cl. G01n 31/12

U.S. Cl. 23—254 EF 3 Claims



In a method for gas analysis, particularly for detecting hydrocarbons, using flame ionization detection for the sample gas to be analyzed and a burner for developing the flame upon receiving fuel gas; a gas, for example air, for compensating the detrimental effect oxygen in the sample gas may have on the measurement, is fed to the burner in addition to the gas to be analyzed and the fuel gas, and mixed with fuel and sample gases prior to reaching the flame developing burner nozzle tip, and independently from the air supply to the burner for sustaining combustion.

3,767,364

REAGENT PIPETTE SYSTEM

David Alan Ritchie, and David Scott Beckham, both of St. Louis, Mo., assignors to Sherwood Medical Industries, St. Louis, Mo.

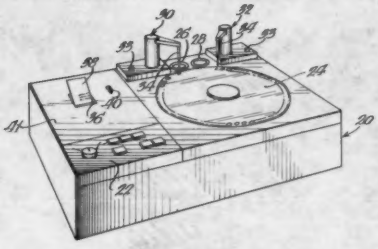
Filed July 30, 1971, Ser. No. 167,379

Int. Cl. B01l 3/02; G01n 1/14

U.S. Cl. 23—259 11 Claims

A testing apparatus for automatically determining prothrombin times and other similar factor assays. A turntable conveyor moves successive blood plasma samples in containers to a test station where each sample is tested, pertinent information sensed and fed to a printer for readout. Preliminary to the testing station is a first reagent dispenser where a reagent is dispensed to each sample and a second reagent

dispenser is located at the testing station for adding a second reagent. Intermediate the two reagent dispensers is a sample incubation device which intimately contacts each container to apply heat thereto to incubate the sample contained therein. Each reagent dispenser is provided with a reagent reservoir and associated magnetic stirring system. A unique system for



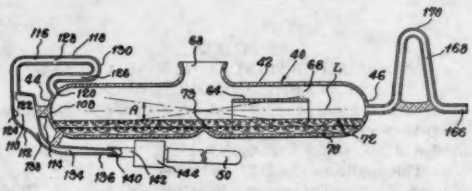
decoupling the magnetic stirring system from a magnetic stirrer and moving the magnetic stirrer out of the path of a pipette forming part of each reagent dispenser is provided. At the testing station, a unique photosensitive detection device is provided for sensing the formation of clots after the second reagent is added.

3,767,365

EXTRACTION APPARATUS

Thomas E. Beesley, Towaco, N.J., assignor to Quantum Assays Corporation, Fairfield, N.J.

Filed Oct. 21, 1971, Ser. No. 191,182
Int. Cl. B01d *11/04, 11/02*
U.S. Cl. 23—269 **8 Claims**



An extraction apparatus including an extraction device for facilitating the mixing of a predetermined volume of immiscible liquids and subsequently separating and dispensing a selected one of the liquids. The apparatus includes a tubular member with an extraction chamber which communicates with a collection chamber through a U-tube, the relative location of the extraction chamber, the collection chamber and the U-tube enabling such mixing and enabling the selected liquid to be passed subsequently from the extraction chamber to the collection chamber by manipulation of the tubular member. Further manipulation of the tubular member enables the collected selected liquid to be dispensed to a test tube while the remaining unwanted liquid is drained from the extraction chamber. A plurality of extraction devices enable multiple mixing and separating operations to be performed simultaneously in a single apparatus by a single operator.

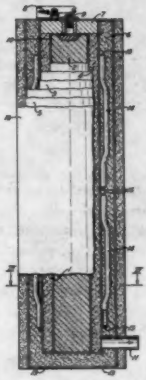
3,767,366

COOLED OXYGEN PRODUCING UNIT

Charles H. Staub, Jr., Pittsburgh, Pa., assignor to Mine Safety Appliance Company, Pittsburgh, Pa.

Filed Sept. 21, 1971, Ser. No. 182,477
Int. Cl. B01j *7/00*
U.S. Cl. 23—281 **7 Claims**

An oxygen producing candle is surrounded by a metal shell, which in turn is enclosed in a metal housing spaced from the shell. The unit is provided with an oxygen passage connecting the inside of the shell with the outside of the unit for delivery of oxygen therefrom. The space between the shell and housing is filled with absorbent insulation, in which water-filled tubes are embedded around the shell. The ends



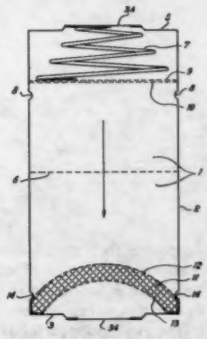
of these tubes are sealed by means that will be destroyed when heat from the burning candle raises the temperature of the tubes to a predetermined point. The water thereby released from the tubes will vaporize and escape through a vent in the housing in order to remove heat from the unit.

3,767,367

INDIVIDUAL RESPIRATORS CONTAINING COMPOSITIONS BASED ON POTASSIUM SUPEROXIDE

Michel Rio, Etancourt, France, assignor to L'Air Liquide, Societe Anonyme pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed Nov. 29, 1971, Ser. No. 202,933
Claims priority, application France, Dec. 2, 1970, 7043332
Int. Cl. B01j *7/00*
U.S. Cl. 23—281 **10 Claims**



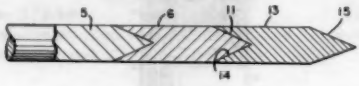
A cartridge for the regeneration of expired gases, which cartridge is adapted to be incorporated in an individual closed-circuit respirator, contains compositions based on potassium superoxide conditioned by the pelleting of the potassium superoxide powder to provide a geometrical and/or polygonal shape having at least some convex faces.

3,767,368

METHOD OF AND MEANS FOR COMMENCING A DEFORMING OPERATION, E. G., HYDROSTATIC EXTRUSION OF A BILLET

Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed June 22, 1972, Ser. No. 265,219
Int. Cl. B21c *23/04*
U.S. Cl. 29—187.5 **1 Claim**



The forward end of the billet to be deformed, e.g., hydrostatically extruded, is provided with a shaped nose of material softer than the billet material. In another embodiment, a series of progressively softer noses is mounted to the forward end of the billet to be extruded. In yet another embodiment, the forward end of the billet is zone refined to provide a hardness gradient in the billet decreasing from a point spaced behind the forward end of the billet toward the said forward end.

3,767,369

DUPLEX METALLIC OVERCOATING

Malcolm Barlow, Sunnyvale, and Jerry R. Lundquist, San Jose, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Aug. 4, 1971, Ser. No. 169,079
Int. Cl. H01f *10/00*
U.S. Cl. 29—194 **1 Claim**

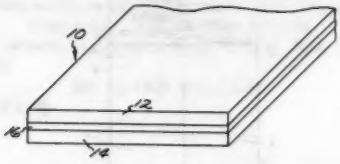
Rhodium plated articles are given superior wear qualities by providing an undercoating of a tin-nickel alloy. The invention is particularly applicable to metallic discs having a magnetic coating on the discs.

3,767,370

COMPOSITE THERMOSTAT MATERIAL

Jacob L. Ornstein, Norton, Mass., assignor to Texas Instruments Incorporation, Dallas, Tex.

Filed Nov. 22, 1971, Ser. No. 200,727
Int. Cl. B32b *15/00*
U.S. Cl. 29—195.5 **2 Claims**



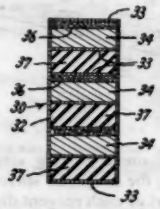
A multilayer composite thermostat material is disclosed having predetermined characteristics of electrical resistivity and a substantially constant deformation resistance responsive to exposure to elevated temperatures over a predetermined temperature range. The composite includes a first outer layer of a first preselected metallic alloy having a relatively high coefficient of thermal expansion, a second outer layer of a second preselected metallic alloy having a relatively lower coefficient of thermal expansion, and an intermediate layer of a third preselected metallic, non-ferrous material having a resistivity of between approximately 10 ohms per circular mil foot to 30 ohms per circular mil foot and a substantially constant deformation resistance responsive to exposure to elevated temperatures up to approximately 500°C.

3,767,371

CUBIC BORON NITRIDE/SINTERED CARBIDE ABRASIVE BODIES

Robert H. Wentorf, Jr., Schenectady, and William A. Rocco, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed July 1, 1971, Ser. No. 158,709The portion of the term of this patent subsequent to July 3, 1990, has been disclaimed.
Int. Cl. B24d *7/14*
U.S. Cl. 51—307 **15 Claims**



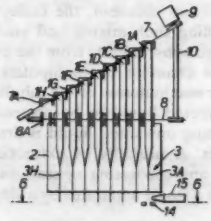
Abrasive bodies comprising combinations of cubic boron nitride crystals and sintered carbide are disclosed. These composite bodies are prepared by superpressure processes. Cubic boron nitride contents of up to about 99 volume percent have been successfully employed in certain constructions. Similar abrasive bodies have been prepared from mixtures of cubic boron nitride, diamond and carbide powder.

3,767,372

APPARATUS FOR MANUFACTURING A MULTI-FILAMENT LIGHT CONDUCTING CABLE

Ian Robertson Elliot, Leeds, England, assignor to The Rank Organisation Limited, London, England

Division of Ser. No. 26,237, April 7, 1970, Pat. No. 3,655,352. This application Oct. 21, 1971, Ser. No. 191,438
Claims priority, application Great Britain, Apr. 25, 1969, 21,319/69
Int. Cl. C03b *23/04*
U.S. Cl. 65—13 **12 Claims**



An apparatus for manufacturing a continuous multi-filament light conducting cable includes a furnace and conveyors having holders thereon for holding rods of light conducting material in parallel relationship. The conveyors move the rods axially and transversely into the furnace to melt the rods in turn into individual light conducting filaments. A drawing means then draws the ends of the melted rods into a multi-filament cable.

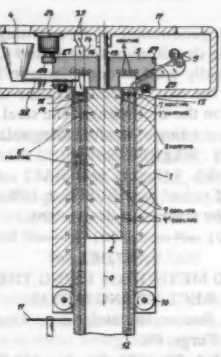
3,767,373
CYLINDRICAL FURNACE FOR CONTINUOUS PRODUCTION OF REINFORCED AND NONREINFORCED SEAMLESS PIPES OF FOAM GLASS

Dimitar Spassov Velev, Rousse, Bulgaria, assignor to Nis Pri Vimmess, Rousse, Bulgaria

Continuation-in-part of Ser. No. 179,528, Dec. 16, 1971, abandoned, Continuation of Ser. No. 778,455, Nov. 25, 1968, abandoned. This application Nov. 15, 1971, Ser. No. 198,777

Int. Cl. C03b *19/06*

U.S. Cl. 65—144 **10 Claims**



Foam glass is poured into a vertical annular chamber of a furnace through a header which rotates with reference to the furnace about the chamber axis to deposit the glass in the chamber as a helical layer; the temperature of the chamber is controlled to let the glass layer harden into a pipe as it descends. Extraction rollers beneath the chamber continuously remove the newly produced pipe from the furnace.

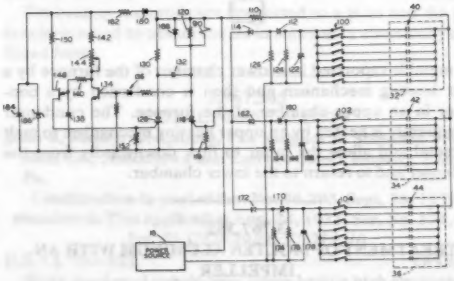
3,767,374
GLASS WARE REJECT APPARATUS

Michael A. Iacovazzi, Bristol, and Constantine W. Kulig, Windsor, both of Conn., assignors to Emhart Corporation, Bloomfield, Conn.

Filed Oct. 26, 1971, Ser. No. 192,140

Int. Cl. C03b *9/44*

U.S. Cl. 65—165 **10 Claims**



A ware reject apparatus is employed in a glassware forming machine in which a plurality of molds are operated to supply a corresponding plurality of bottles in series on a common output conveyor. The apparatus permits malformed bottles coming from a particular mold to be eliminated from the conveyor by means of an ejector mechanism mounted adjacent the conveyor and operated by an electrical sequence timer driven in synchronism with the conveyor. A selector panel is connected with the sequence timer and has a plurality of manually operated switches corresponding respectively to each of the molds in the glassware forming machine. When a particular mold is malfunctioning and producing a low quality bottle, the corresponding switch on the selector panel is actuated and electrical timing signals from the sequence timer cause the ejector mechanism to schematically remove each of the bottles produced by the malfunctioning mold.

3,767,375
REFRACTORY FURNACE TANK WALLS

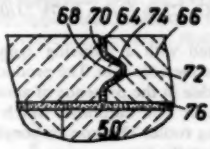
Edgard Brichard, Jumet; Joseph Declaye, and Jean Autequitte, both of Moustier/S/Sambre, all of Belgium, assignors to Glaverbel, Watermael-Boitsfort, Belgium

Continuation-in-part of Ser. No. 872,151, Oct. 29, 1969, abandoned. This application Apr. 4, 1972, Ser. No. 241,055

Claims priority, application Luxembourg, Oct. 30, 1968, 57,194

Int. Cl. C03b *18/00*

U.S. Cl. 65—182 R **9 Claims**



A tank for containing a bath of molten metal in a float glass furnace has a wall formed by a plurality of juxtapositioned prefabricated refractory members. The joints between the members define interstices. Interstices are also being defined adjacent other faces of the blocks. Powdered carbon, alumina, chromium oxide, a carbide or nitride not wettable by molten metal at least partially fills these interstices to prevent the flow of molten metal therein so as to prevent raising of the blocks from their assembled positions by the flow of molten metal behind the blocks. These are in the interstices between the particles of the powder flow paths having restricted cross-sectional areas. The object of these restricted areas and the surface properties of the powder material is to prevent penetration by molten metal.

3,767,376
HERBICIDES 1-ALIPHATIC-3-ARYL-5-IMINO IMIDAZOLIDINE-2,4-DIONES AND IMIDAZOLIDINE-2-ONE-44THIONES

Malcolm S. Singer, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 852,509, Aug. 22, 1969, Pat. No. 3,655,689, which is a continuation-in-part of Ser. No. 745,417, July 17, 1968, abandoned. This application Nov. 4, 1971, Ser. No. 195,872

Int. Cl. A01n *9/22*

U.S. Cl. 71—92 **12 Claims**

5-imino-imidazolidinediones and 4-thio-5-imino-imidazolidinediones in which the nitrogen in the 1 position of the imidazolidinedione nucleus is substituted with an aryl radical of six to 15 carbon atoms, the nitrogen in the 3 position is substituted with an aliphatic or cycloaliphatic radical and the imino group is otpionally substituted with a carbamoyl or N-chloroacetylcarbamoyl radical. These imidazolidinediones are pre- and post-emergence herbicides.

3,767,377

METHOD OF INCREASING THE RECOVERABLE SUGAR FROM SUGAR CANE

Panos L. Poulos, Winnetka, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Filed Nov. 2, 1970, Ser. No. 86,329
Int. Cl. A01n 9/24
U.S. Cl. 71—107 7 Claims

This invention discloses a method of increasing the recoverable sugar from sugar cane which comprises contacting the cane with an effective amount of an alkyl ester of 2-methoxy-3,6-dichlorobenzoic acid.

3,767,378

PRODUCTION OF RUTILE AND IRON FROM ILMENITE

Andrew A. Cochran, and Aaron G. Starliper, both of Rolla, Mo., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Continuation-in-part of Ser. No. 2,659, Jan. 13, 1970, abandoned. This application Jan. 5, 1972, Ser. No. 215,640
Int. Cl. C21b 15/04; C27b 53/00
U.S. Cl. 75—1 5 Claims

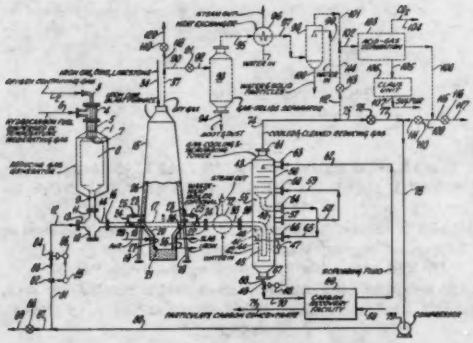
Ilmenite is treated with a reducing agent to selectively reduce iron oxide to metallic iron. The product is then treated with carbon monoxide in the presence of ammonium polysulfide solution to form iron carbonyl, which is removed by volatilization leaving rutile. The iron carbonyl is then decomposed to produce metallic iron.

3,767,379

ORE REDUCTION PROCESS USING RECIRCULATED COOLED GAS

Charles P. Marion, Mamaroneck, N.Y., assignor to Texaco Development Corporation, New York, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,443
Int. Cl. C21b 5/06
U.S. Cl. 75—42 12 Claims



All of the hot effluent reducing gas from a partial oxidation reducing gas generator is mixed with a comparatively cooled and cleaned portion of the reducing gas to produce a stream of improved reducing gas at the proper temperature for injecting into an ore reduction zone e.g., iron-ore blast furnace. Optionally, cooled, cleaned and purified off-gas from the ore reduction zone may be mixed with the reducing gas.

3,767,380

PROCESS FOR THE PRODUCTION OF FREE-CUTTING CARBON STEELS WITH SPECIAL DEOXIDATION

Sandor Csepanyi; Sandor Enekes, both of Miskolc; Guido Temesszentandrasi, Budapest; Pal Zambo, Miskolc, and Zoltan Palmay, Ozd, all of Hungary, assignors to Lenin Kohaszati Muvek, Miskolc-Diosgyorvasgyar and Ozdi Kohszati Uzemek, Ozd, Hungary

Filed May 26, 1971, Ser. No. 147,223
Claims priority, application Hungary, May 29, 1970, OI-128
Int. Cl. C21c 7/00
U.S. Cl. 75—58 4 Claims

Process for the production of free-cutting carbon steels, wherein during the deoxidation CaSiAl and CaMnSiAl ferroalloys are combinedly used as deoxidants in such a way that the proportion of the two deoxidants in the used deoxidating addition depends on the C-content of the steel. The two deoxidants are added according to the following relation:

$x_1 \cdot (C\,\% - 0.15) \cdot 8(kg/t)$ CaSiAl +
$+ x_2 \cdot (0.65 - C\,\%) \cdot 8\ (kg/t)$ CaMnSiAl

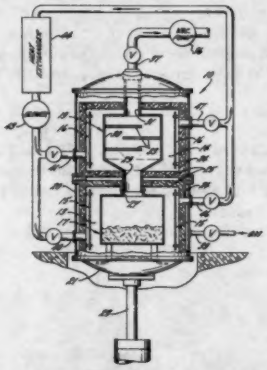
where the value of x_1 and x_2 is 70/Si % ± 10% and Si % means the Si-content of the respective desoxidant.

3,767,381

FURNACE AND METHOD OF USING THE SAME FOR RECLAIMING METAL

Irvin P. Bielefeldt, Roscoe, Ill., assignor to Alco Standard Corporation, Valley Forge, Pa.

Filed July 28, 1971, Ser. No. 166,787
Int. Cl. C22b 7/00, 19/00; C21c 5/38
U.S. Cl. 75—63 4 Claims



A metal is vaporized in a lower chamber of the furnace by a lower heating mechanism and then is condensed by a condenser in an upper chamber of the furnace. The condenser subsequently is heated by an upper heating mechanism to melt the metal and allow the latter to flow downwardly from the condenser and to return to the lower chamber.

3,767,382

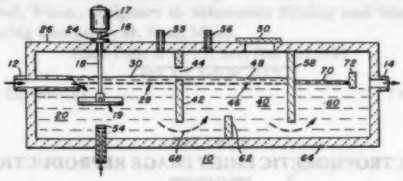
TREATMENT OF MOLTEN ALUMINUM WITH AN IMPELLER

Marshall J. Bruno, Greensburg; Noel Jarrett, New Kingsington, and Burl L. Slaugenhaupt, Apollo, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 4, 1971, Ser. No. 195,772
Int. Cl. C22b 21/06
U.S. Cl. 75—68 R 30 Claims

Molten aluminum is treated with selectively maintained salt flux in a compact efficient system to decrease its oxide, gas and sodium content. Gas removal is further aided by stripping with a non-reactive stripping gas. The system features an in-

tensely agitated zone for contacting the metal and the salt flux followed by a quiet separation zone. Molten metal introduc-



tion, agitation and flux characteristics are utilized to achieve the required efficiencies.

3,767,383

REFINING COPPER PYROMETALLURGICALLY BY TWO-STAGE SUBATMOSPHERIC TREATMENT

Malcolm Charles Evert Bell, Oakville, Ontario, Canada, and John Kenneth Pargeter, Warwick, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Nov. 15, 1971, Ser. No. 198,984

Int. Cl. C22b *15/00*

U.S. Cl. 75—76 **17 Claims**

Copper precipitated from solution is melted in air to slag iron and to form a copper bath containing sulfur and oxygen, with the oxygen content being at least in excess of the sulfur content without producing a separate cuprous oxide phase, and at least one other volatile impurity selected from the group consisting of arsenic, bismuth, lead, selenium, tellurium, tin and zinc. The copper bath is subjected to a subatmospheric pressure treatment while passing a purge gas, that can contain free oxygen, through the bath to rapidly remove sulfur from the bath. The flow of the inert gas through the bath is terminated and the bath is then subjected to even lower subatmospheric pressures to remove other volatile impurities.

3,767,384

RECOVERY OF TIN FROM ORE CONCENTRATES AND OTHER TIN-BEARING MATERIALS

Philip John Nixon, Stoke-on-Trent, England, and Alan Philip Prosser, Kareela N.S.W., Australia, assignors to Consolidated Gold Fields Limited, London, England

Filed Sept. 15, 1971, Ser. No. 180,797

Claims priority, application Great Britain, Oct. 2, 1970, 47,006/70

Int. Cl. C22b *3/00, 25/04*

U.S. Cl. 75—101 R **5 Claims**

Tin bearing materials are converted to a glass and the glass is acid-leached to obtain the tin in solution in chemically combined form.

3,767,385

COBALT-BASE ALLOYS

John S. Slaney, Greenburg, Pa., assignor to Standard Pressed Steel Co., Jenkintown and Latrobe Steel Company, Latrobe, Pa.

Continuation-in-part of Ser. No. 76,293, Sept. 28, 1970, abandoned. This application Aug. 24, 1971, Ser. No. 174,497

Int. Cl. C22c *19/00;* **C22f** *1/10*

U.S. Cl. 75—122 **16 Claims**

Work-hardened combined cobalt-base alloys having high strength and ductility combined with excellent corrosion resistance, characterized by an iron content from 6 to 25 percent by weight but free of embrittling phases often associated with high iron content, the percent by weight of the other principal alloy constituents being: nickel, 18 – 40; molybdenum, 6 – 12; and chromium, 15 – 25. Further alloy embodiments comprising titanium and aluminum or columbium in a total amount up to 8 percent by weight and iron in an amount from 6 to 10 percent retain ductility at elevated temperatures to 900° F.

3,767,386

COMPOUND CAST-IRON FOR MAKING BRAKE SHOES

Yoshitaka Ueda, Minoo; Akio Yoshioka, and Hidehiko Fujiwara, both of Osaka, all of Japan, assignors to Kabushiki Kaisha UEDASA CHUZO-SHO, Osaka, Japan

Filed Dec. 28, 1971, Ser. No. 213,158

Claims priority, application Japan, Apr. 5, 1971, 46/21219

Int. Cl. C22c *37/06;* **F16d** *69/02*

U.S. Cl. 75—123 D **2 Claims**

Cast-iron composition for making brake shoes which composition, after casting, consists essentially of C 2.7–3.5%, Si 1.0–2.0%, Mn 0.4–1.5%, P 1.0–3.0%, S<0.15% and Ti 0.3–0.7% and additionally includes either V 0.05–0.30% or Cr 0.10–1.25% or Mo 0.15–1.25%, the remaining proportion of the composition consisting of iron.

3,767,387

HIGH TENSILE STRENGTH STEEL HAVING EXCELLENT PRESS SHAPABILITY

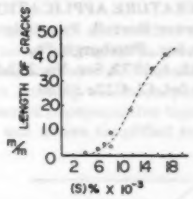
Tetsuo Yamaguchi; Hiroshi Kido; Takao Nakagawa, and Toshio Omori, all of c/o Nippon Kokan Kabushiki Kaisha Technical Institute 2730, Minamiwataridachio, Kawasakishi, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 764,085, Oct. 1, 1968, abandoned. This application Mar. 26, 1971, Ser. No. 128,334

Claims priority, application Japan, Oct. 5, 1967, 42/63780

Int. Cl. C22c *37/10, 39/02*

U.S. Cl. 75—124 **7 Claims**



Hot rolled high tensile strength steel having excellent press shapability comprises a composition consisting of 0.03 to 0.25% of C, 0 to 0.60% of Si, 0.30 to 1.80% of Mn, less than 0.010% of S, 0.005% to 0.10% of Al, 0.005% to 0.05% of Nb, the balance of iron and impurities, and the sum of %C + 10(%S) is up to 0.25%.

3,767,388

WELDING ROD FOR THE WELDING OF CHROMIUM STAINLESS STEEL

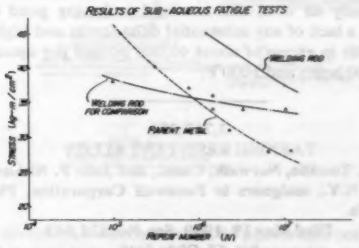
Shigetsugu Asakura; Kiyoshi Watanabe; Hiroshi Wachi, all of Hitachi, and Tadashi Nemoto, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 3, 1971, Ser. No. 177,660

Claims priority, application Japan, Sept. 7, 1970, 45/77752

Int. Cl. C22c *39/14, 39/20*

U.S. Cl. 75—124 **6 Claims**



A welding rod for the welding of chromium stainless steel comprising not more than 0.07 percent by weight of C, not

more than 1.0 percent by weight of Si, not more than 1.0 percent by weight of Mn and 11 – 13.5 percent by weight of Cr as essential components, said welding rod consisting of 0.02 – 0.06 percent by weight of C, 0.1 – 1 percent by weight of Si, 0.1 percent by weight of Mn, 11 – 13.5 percent by weight of Cr, 3.0 – 3.95 percent by weight of Ni, 0.3 – 0.6 percent by weight of Mo, 0.005 – 0.1 percent by weight of Al, 0.005 – 0.1 percent by weight of Ti and the remainder of Fe and impurities.

3,767,389

MARAGING STAINLESS STEEL PARTICULARLY FOR USE IN CAST CONDITION

Stephen Floreen, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 865,969, Oct. 13, 1969, abandoned. This application Sept. 16, 1971, Ser. No. 181,234

Int. Cl. C22c *39/20*

U.S. Cl. 75—128 C **17 Claims**

A maraging stainless steel containing correlated amounts of nickel, chromium, silicon, and metal from the group consisting of aluminum and titanium, the steel being particularly suitable in cast form since it affords a combination of good strength, toughness and corrosion resistance and also exhibits excellent foundry characteristics.

3,767,390

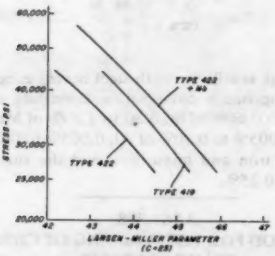
MARTENSITIC STAINLESS STEEL FOR HIGH TEMPERATURE APPLICATIONS

Ronald A. Hahn, Lower Burrell, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Feb. 1, 1972, Ser. No. 222,502

Int. Cl. C22c *39/20*

U.S. Cl. 75—128 G **4 Claims**



A martensitic stainless steel for high temperature applications consisting essentially of about .15 to .35 percent carbon, up to 1 percent manganese, up to 1 percent silicon, 11 to 13 percent chromium, .25 to 1.25 percent nickel, .50 to 1.50 percent molybdenum, .50 to 1.50 percent tungsten, .10 to .50 percent vanadium, .05 to .50 percent niobium and the balance substantially all iron, characterized in having good impact strength, a lack of any substantial delta ferrite and high creep rupture life in excess of about 40,000 pounds per square inch at 100,000 hours and 1000°F.

3,767,391

TARNISH RESISTANT ALLOY

Joseph J. Tuccillo, Norwalk, Conn., and John P. Nielsen, New York, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed May 19, 1969, Ser. No. 825,943

Int. Cl. C22c *5/00*

U.S. Cl. 75—134 C **2 Claims**

A tarnish-resistant alloy, especially useful in the presence of sulfur and sulfur-containing environments, comprising 39 to 47 weight percent gold, 9 to 12 weight percent palladium, and the balance silver and copper wherein the silver-to-copper weight ratio is from 1:1 to 1.5:1.

3,767,392

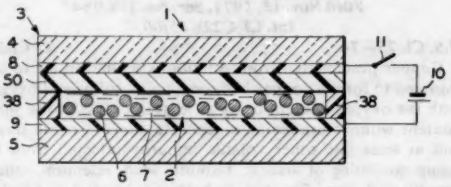
ELECTROPHORETIC LIGHT IMAGE REPRODUCTION PROCESS

Isao Ota, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Apr. 15, 1970, Ser. No. 28,587

Int. Cl. G03g *5/00, 13/00*

U.S. Cl. 96—1 R **18 Claims**



Electrophoretic light image reproduction process is disclosed in which a D.C. voltage is applied to a double layer of a photoconductive layer and an electrophoretic suspension layer including a dispersion of at least one electrophoretic material in a finely divided powder form suspended in a suspending medium, whereby said D.C. voltage changes the optical reflective property of said electrophoretic suspension layer due to electrophoretic movement of said electrophoretic material, said photoconductive layer is exposed to a light image so that the light-struck area has a low electrical resistance, an electric field is applied to said double layer having said electrophoretic suspension layer changed in the optical reflective property and having said photoconductive layer lowered in the electrical resistance at the light-struck area, whereby said electrophoretic material at said light-struck area moves electrophoretically and reproduces said light image on said electrophoretic suspension layer.

3,767,393

ALKYLAMINOAROMATIC ORGANIC PHOTOCONDUCTORS

Charles J. Fox, Rochester, N.Y., assignor to Kodak Park Division, Rochester, N.Y.

Continuation-in-part of Ser. No. 42,441, June 1, 1970, abandoned, which is a continuation-in-part of Ser. No. 834,984, June 20, 1969, abandoned. This application Nov. 11, 1971, Ser. No. 197,758

Int. Cl. G03g *5/06*

U.S. Cl. 96—1.5 **8 Claims**

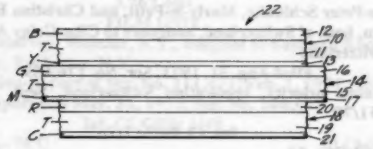
Alkylaminoaromatic compounds and vinylaminoaromatic compounds are useful as organic photoconductors in electrophotographic systems.

3,767,394

COLOR COPYING AND SHEET MATERIAL THEREFOR

Joseph A. Wiese, Jr., and George Van Dyke Tiers, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 2, 1971, Ser. No. 111,981
Int. Cl. G03c 7/16
U.S. Cl. 96—11 7 Claims



A stabilized photosensitive heat-developable sheet material or assembly of sheet materials for making color prints or transparencies by a method involving exposure, heat development, and thermographic transfer.

3,767,395

MULTIPLE EXPOSURE COLOR TUBE SCREENING

William A. Rowe, Palatine, and James W. Schwartz, Glenview, both of Ill., assignors to Zenith Radio Corporation, Chicago, Ill.

Filed Sept. 13, 1971, Ser. No. 179,920
Int. Cl. G03c 5/00
U.S. Cl. 96—36.1 9 Claims

In forming a light-absorbing grille or mat for a black-surround color tube, the screen area is covered with clear but sensitized polyvinyl alcohol (pva) and is thereafter exposed to develop a family of pva dots individually covering an elemental area of the screen that is subsequently to receive a deposit of one of three phosphors, green, blue and red. The exposure step is accomplished with seven light sources one of which is positioned to simulate one of the electron guns of the tube and this source accomplishes first order printing or exposure of the pva layer. The remaining six light sources are symmetrically and equidistantly spaced with respect to the first light source to accomplish second order printing or exposure of the same elemental areas exposed by the first mentioned light source. In this fashion each elemental screen area that is to receive a phosphor deposit is concurrently subjected to exposure from seven light sources.

3,767,396

METHOD OF SCREENING A COLOR IMAGE REPRODUCER

Sam H. Kaplan, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Sept. 13, 1971, Ser. No. 179,921
Int. Cl. G03c 5/00
U.S. Cl. 96—36.1 8 Claims

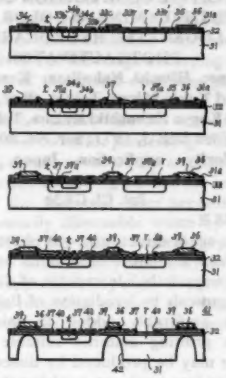
The faceplate section of a tri-color cathode-ray tube of the shadow mask type is coated with a photosensitive layer and is simultaneously exposed through apertures of the shadow mask with actinic energy from six separate energy sources symmetrically located relative to a reference position which simulates the source of one of the three electron beams of the tube. For example, in screening with green phosphor, the light sources are symmetrically positioned relative to a reference position which simulates the source of the electron beam assigned to excite green phosphor in the operation of the tube.

3,767,397

PHOTOGRAPHIC TREATMENT FOR SEMICONDUCTOR DEVICES OR THE LIKE

Katsuhiko Akiyama, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 811,425, March 28, 1969, abandoned. This application Oct. 21, 1971, Ser. No. 191,355
Int. Cl. G03c 5/00; H01l 7/00
U.S. Cl. 96—36.2 4 Claims



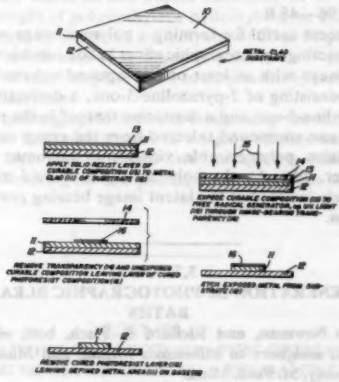
A semiconductor device and method of making the same, which utilizes a novel photographic process that allows void areas of a positive photosensitive material layer to serve as an etching mask for forming electrode patterns or a metallic layer. The number of photosensitive layers is reduced in the present method and allows simplified manufacturing operations.

3,767,398

SOLID PHOTORESIST COMPRISING A POLYENE AND A POLYTHIOL

Charles Robert Morgan, Silver Spring, Md.

Filed Oct. 26, 1971, Ser. No. 192,251
Int. Cl. G03c 1/68, 5/00
U.S. Cl. 96—36.2 12 Claims



This invention is directed to a solid photoresist composition comprising a polyene, polythiol and photosensitizer admixture which when coated on a substrate to be modified, e.g., ceramic, glass, metal oxide and metal surfaces and exposed imagewise to actinic radiation results in an insoluble cured

polythioether photoresist in the exposed segments with the unexposed segments of the composition being removed in suitable solvents to allow etching of the metal thereunder. Optionally, the solid photoresist composition can be covered with a transparent film to insure cleanliness, which film can be removed before or after exposure as desired.

3,767,399

PHOTOSENSITIVE COMPOSITION CONTAINING AN ALDOL NAPHTHYLAMINE AS COLOR FORMER AND A HALOGENATED HYDROCARBON AS PHOTOACTIVATOR

Hiroshi Takano; Hitoshi Nakajima; Kenzo Harada, all of Saitama, and Yukio Miura, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 3, 1971, Ser. No. 204,728

Claims priority, application Japan, Dec. 19, 1970, 45/113603

Int. Cl. G03c

U.S. Cl. 96—48 R **13 Claims**

A novel non-silver direct print-out photosensitive composition is made from a mixture of an aldol naphthylamine compound and an organic halide capable of discharging halogentated carbon radicals by irradiation of light. A binder and a sensitizer are preferably added to this composition. A photosensitive printing material suitable for photographic printing paper may be produced by dissolving or dispersing this composition into a solvent, applying the solution to a support, and evaporating the solvent. Image formation is conducted by direct printing. Either a dry-system fixing or a wet-system fixing may be applied to the printed image. This photosensitive material is extremely excellent in resistance to ozidation, resolving power, sensitivity, reproducibility of color and resistance to chemicals, and stable before and after exposure.

3,767,400

PROCESS FOR THE FORMATION OF POLYMER IMAGES

Yoshihide Hayakawa, and Masato Satomura, both of 105 Oaza Mizanuma, Asaka, Japan

Continuation of Ser. No. 756,005, Aug. 28, 1968, abandoned. This application Dec. 8, 1971, Ser. No. 206,000

Claims priority, application Japan, Aug. 28, 1967, 42/55124

Int. Cl. G03c *1/70*

U.S. Cl. 96—48 R **29 Claims**

A process useful for forming a polymer image which comprises reacting a photographic silver halide emulsion bearing a latent image with at least one compound selected from the group consisting of 2-pyrazoline-5-one, a derivative thereof, 3-pyrazoline-5-one and a derivative thereof in the presence of at least one compound selected from the group consisting of an addition polymerizable vinylidene monomer and vinyl monomer, whereby the polymerization of said monomer is selectively induced at the latent image bearing portion of the emulsion.

3,767,401

REGENERATION OF PHOTOGRAPHIC BLEACH/FIX BATHS

Norman Newman, and Richard S. Fisch, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 15, 1971, Ser. No. 208,434

Int. Cl. G03c *5/26, 5/32*

U.S. Cl. 96—50 A **12 Claims**

Depleted photographic bleach/fix baths which include bleaching agents (such as the iron III complex of ethylenediaminetetraacetic acid) and a silver halide solvent are regenerated by addition to a recycled stream thereof of an iron, cobalt and copper-free regenerating solution which includes a polycarboxylic acid, a silver halide solvent, and an organic bleach-enhancing compound which includes at least one atom which is different from carbon, hydrogen and nitrogen.

3,767,402

PHOTOGRAPHIC COLOUR MATERIAL

Hans-Peter Schlunke, Marly-le-Petit, and Christian Egli, Magden, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

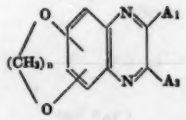
Filed Aug. 31, 1971, Ser. No. 176,689

Claims priority, application Switzerland, Sept. 4, 1970, 13251/70

Int. Cl. G03c *7/16*

U.S. Cl. 96—53 **11 Claims**

A photographic light-sensitive material for the silver bleaching process which comprises on a support in at least one layer a quinoxaline of formula



(1)

wherein A_1 and A_2 are each an alkyl-, aralkyl-, aryl, or heterocyclic group and n is 1 or 2, whereby the oxygen-containing ring is connected with the quinoxaline group in the 5,6- or 6,7-position as a colour bleaching catalyst as well as quinoxalines of the formula given above are disclosed.

3,767,403

TETRA-ALKYL P-PHENYLENE DIAMINE WITH AROMATIC PRIMARY AMINO COLOR DEVELOPING AGENT

Theofiel Hubert Ghys, Kontich; Jozef Frans Willems, Wilrijk, and George Frans Van Veelen, Mortsel, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

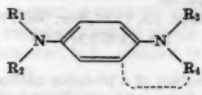
Filed Sept. 8, 1971, Ser. No. 178,811

Claims priority, application Great Britain, Dec. 1, 1970, 57,062/70

Int. Cl. G03c *7/00*

U.S. Cl. 96—55 **6 Claims**

A photographic colour developing composition for silver halide material is described which comprises besides the aromatic primary amino colour developing agent a tetraalkyl p-phenylene diamine compound of the formula :



wherein

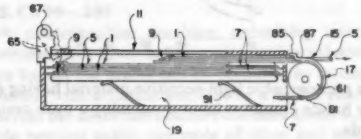
each of R_1, R_2 and R_3 is C_1–C_6 alkyl or R_1 together with R_2 represent the atoms necessary to close a pyrrolidine ring, and R_4 is C_1–C_6 alkyl or ethylene or propylene linked to the C-atom of the phenylene ring in ortho position to the amino group carrying the R_4-substituent.

one of R_1–R_4 being a C_2–C_6 alkyl group carrying a solubilizing group. The tetraalkyl p-phenylene diamine compound increases the activity of the colour developing agent without effecting to a noteworthy extent the fog and gradation of the silver halide material.

3,767,404
FILM UNIT

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 111,471, Feb. 1, 1971. This application Mar. 31, 1972, Ser. No. 240,098
Int. Cl. G03c *1/48*
U.S. Cl. 96—76 C **20 Claims**



A photographic film unit of the self-processing type includes a resiliently flexible carrier or card for facilitating handling of the film unit and separation of waste materials from remaining picture-recording portions after processing of the film unit has been initiated.

3,767,405
FILM UNIT

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 7, 1971, Ser. No. 178,048
Int. Cl. G03c *1/48*
U.S. Cl. 96—76 R **4 Claims**

A photographic film unit of the self-processing type includes an image-recording portion with attached fluid accommodating or reservoir means for supplying and collecting a processing fluid (e.g. a pod and trap). The fluid supplying means is initially in communication with the leading end of the image-recording portion, but is disposed in front of the image-recording portion (with respect to the direction of viewing the final print) during exposure and is movable relative thereto into substantially coplanar relationship therewith for processing. Thereafter, the fluid supplying means or reservoir is further movable with respect to the image-recording portion for improving the final appearance of the film unit after processing without generating any necessarily disposable waste by placing the supplying means behind the image-recording portion. The movable portion is substantially flat and, in accordance with one feature, is approximately equal in area to the area of the image-recording portion, to evenly cover the entire side of the image-recording portion oppposite from the print-viewing side. The fluid collecting means is located within the borders of the film unit rendering its movement or removal after processing unnecessary.

Moreover, the present film unit is arranged to be completely and automatically formed in the camera so that no manipulation by the user is necessary after removal from the camera.

3,767,406
FILM UNIT WITH FOLDABLE TRAP AND POD FOR PROCESSING FLUID

John A. Mathews, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 7, 1971, Ser. No. 178,049
Int. Cl. G03c *1/48*
U.S. Cl. 96—76 C **17 Claims**

A photographic film unit of the self-processing type includes an image-recording portion with attached fluid accommodating or reservoir means for supplying and collecting a processing fluid (e.g. a pod and trap). The fluid accommodating means are initially in communication with the leading and trailing ends, respectively, of the image-recording portion, but are disposed in front of the image-recording portion (with respect to the direction of viewing the final print) during exposure and are movable relative thereto into substantially coplanar relationship therewith for processing. Thereafter, the fluid accommodating means or reservoirs are further movable with respect to the image-recording portion for improving the final appearance of the film unit after processing without generating any necessarily disposable waste by placing the reservoir means behind the image-recording portion. The movable portions are substantially flat and, in accordance with one feature, are approximately equal in combined area to the area of the image-recording portion, to evenly cover the entire side of the image-recording portion opposite from the print-viewing side.

3,767,407
PHOTOGRAPHIC MATERIALS

August Jean Van Paesschen, Antwerpen, and Joseph Antoine Herbots, Edegem, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Oct. 19, 1971, Ser. No. 190,646
Claims priority, application Great Britain, Oct. 20, 1970, 49,792/70
Int. Cl. G03c *1/84*
U.S. Cl. 96—84 R **4 Claims**

To improve the adhesion of an antihalation layer to a polyethylene terephthalate film the antihalation layer is formed from a dye or finely divided pigment dispersed in a water-insoluble alkali-soluble binder consisting of 60 to 85 percent by weight of polymethylene-hydroxybenzoic acid and 40 to 15 percent by weight of a copolymer of 20 to 50 percent by weight of acrylic acid or methacrylic acid, 15 to 79 percent by weight of an alkyl acrylate and 1 to 50 percent by weight of an alkyl methacrylate.

When the photographic material comprising the antihalation layer thus formed is treated in a highly alkaline bath the antihalation layer can be rinsed away completely with pure water before entering the first photographic developer bath.

3,767,408
DIRECT PRINT-OUT PHOTOGRAPHIC OPTICAL RECORDING MEDIA COMPRISING A RHODAMINE DYE

Sol Esther Harrison, Huntingdon Valley, Pa., and Joel Edward Goldmacher, Dutch Neck, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 28, 1972, Ser. No. 221,830
Int. Cl. G03c *1/52*
U.S. Cl. 96—90 **12 Claims**

A direct print-out optical recording media consists of a

rhodamine type dye dissolved in a non-polar polymeric host, the rhodamine dye being in a leuco form in the host.

3,767,409

PHOTOGRAPHIC TRIORGANOPHOSPHINE-AZIDE DYE FORMING COMPOSITION AND ARTICLE

Patrick J. Grisdale, and Bruce E. Babb, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,392
Int. Cl. G03c *1/52, 1/58, 1/72*
U.S. Cl. 96—91 N **14 Claims**

Photographic compositions including a radiation-sensitive complex of a triorganophosphine, e.g. a triarylphosphine, with an organoazide such as an arylazide are radiation-sensitive and can be imagewise exposed to activating rays to yield a species that can react with a dye-forming coupler to form an image dye, e.g. an azo dye. Optionally, such compositions can include a polymeric binder and/or a dye-forming coupler. In another aspect, image-forming compositions are presented which include the organoazide and a precursor to the triorganophosphine, a phosphonium salt for example, that yields triorganophosphine on treatment with base. With such an embodiment, the composition is relatively light-insensitive prior to alkaline treatment which activates the composition by forming the phosphine-azide complex in situ, and shelf life is desirably extended. When these compositions are present on a support, photographic or image-forming elements are formed. Once the azide-phosphine complex is present in a composition or element of this invention, imagewise exposure to activating rays for the complex and subsequent or concomitant treatment with a dye-forming coupler or the like produces a photographic image in exposed regions, i.e. a negative image of the original exposure. If a leuco compound, dye forming coupler, etc., is present in the composition, then a visible image generally forms on exposure. After production of the image, it can be stabilized by overall heating. In certain cases, heat fixation also produces intensification of a low density or substantially latent photographic image. If desired, positive images can be formed by thermophotographic means. Once the phosphineazide complex is present in the composition, imagewise exposure to heat desensitizes the complex in heated regions and a subsequent overall exposure to activating rays for the complex produces either a visible or an intensifiable photographic image. No heat fixation is required, but image intensification can be accomplished by heat. Lithographic printing surfaces can be prepared when a hydrophilic polymeric azide is used to form the phosphine azide complex or when hydrophilic polymeric couplers are used to form the dye image.

3,767,410

PHOTOGRAPHIC HYDROPHILIC COLLOIDS AND METHOD OF COATING

David Philip Brust, and Grace Eileen Kane, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 22, 1972, Ser. No. 228,379
Int. Cl. G03c *1/02*
U.S. Cl. 96—94 **4 Claims**

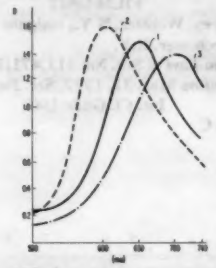
A composition is disclosed which comprises a solution of a hydrophilic colloid and a viscosity increasing concentration of a polysaccharide comprising a linear polymer in which either (1) at least one-third of the monosaccharide units are linked 1-2 and the remaining monosaccharide units are linked 1-4, or (2) substantially all monosaccharide units are linked 1-4 and at least 50 percent of the hydroxyl groups are acetylated or alkali metal sulfated.

3,767,411

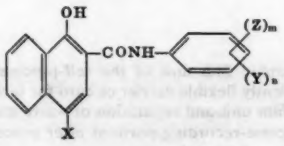
COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL FORMING NOVEL CYAN IMAGES

Kimio Kishimoto; Isao Shimamura; Haruhiko Iwano, and Atsuaki Arai, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-shi, Kanagawa, Japan

Filed Oct. 20, 1971, Ser. No. 190,866
Claims priority, application Japan, Oct. 20, 1970, 45/91824
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **5 Claims**



A color photographic light-sensitive material having at least one silver halide emulsion layer containing a cyan coupler of the formula:



wherein X represents a member selected from the group consisting of a hydrogen atom and a halogen atom; Y represents a member selected from the group consisting of RCONH-, RNHCO-, or RNHCONH-; the substituted position of said Y being limited to the m-position and the p-position; R represents an alkyl group having more than 10 carbon atoms; *n* is an integer of one to two; Y may be the same or different if *n* is an integer of two, but in this case, if the p-position has been substituted with Y, the other Y has been substituted at the m-position; Z represents a member selected from the group consisting of a hydrogen atom, a halogen atom, a methyl group, a methoxy group and an ethoxy group; and *m* is an integer one to two; said Z may be the same or different, if *n* is an integer two.

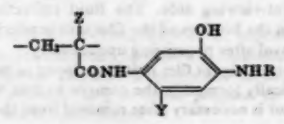
3,767,412

POLYMERIC COLOUR COUPLERS AND THEIR USE IN COLOUR PHOTOGRAPHY

Marcel Jacob Monbaliu, Mortsel; Armand Maria Van Den Bergh, Berchem, and Jan Jozef Priem, Mortsel, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Nov. 9, 1971, Ser. No. 197,167
Claims priority, application Great Britain, Dec. 16, 1970, 59,720/70
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **5 Claims**

Polymeric colour couplers for use in photographic silver halide colour emulsions are described which comprise recurring units of the formula:



wherein :

Z is hydrogen or C_1-C_4 alkyl,

Y is hydrogen or halogen and

R is alkoxycarbonyl, alkylcarbamoyl or an aliphatic aromatic or heterocyclic carboxylic acid or sulphonic acid acyl group.

These colour couplers have no effect on the viscosity of the emulsions, show no crystallization tendency and yield upon colour development dye images with high stability against heat and humidity.

3,767,413

EMULSION CONTAINING INTERNALLY FOGGED PHOTOSENSITIVE SILVER HALIDE GRAINS FORMED WITH AN AQUEOUS SILVER SALT SOLUTION CONTAINING ALKALI METAL IODIDE IN THIOETHER

Jerry B. Miller, deceased, late of Webster, N.Y. (by Carol K. Miller, executrix), assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 3, 1972, Ser. No. 223,371
Int. Cl. G03c *1/28*
U.S. Cl. 96—107 **8 Claims**

A photosensitive emulsion containing internally fogged photosensitive silver halide grains having substantially no surface fog on the grains can be prepared by mixing a silver salt solution with a halide solution in a liquid reaction medium wherein the silver salt solution contains about 0.5 to about 7.0 mole percent iodide per mole of silver and mixing is carried out in the presence of at least 0.5 grams of a thioether silver halide solvent per mole of silver in the liquid reaction medium. Emulsions prepared can be employed in negative or direct-positive photographic materials. Such emulsions enable higher concentrations of sensitizing dyes to be employed on the photosensitive silver halide grains.

3,767,414

THERMOSENSITIVE COPY SHEETS COMPRISING HEAVY METAL AZOLATES AND METHODS FOR THEIR USE

William A. Huffman, White Bear Lake; Dean R. Lowrey, North Oaks; Brian K. Hill, Village of Cottage Grove, and Jacquelyn D. Bush, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 22, 1972, Ser. No. 255,617
Int. Cl. G03c *1/02*, *1/72*; B41n *5/00*
U.S. Cl. 96—114.6 **20 Claims**

Copy-sheets containing heavy metal azolates, such as silver imidazolates, are imaged by heating with a reducing agent applied in image-forming pattern. Colored images are then produced in base-sensitive copy-sheets by heating the imaged azolate sheet thereagainst.

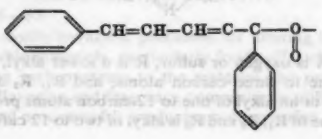
3,767,415

PHOTOSENSITIVE COMPOSITION COMPRISING LIGHT-SENSITIVE POLYMER

Hideaki Tanaka, Hiratsuka, and Minoru Tsuda, Kanagawa, both of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Nov. 11, 1971, Ser. No. 197,755
Claims priority, application Japan, Nov. 14, 1970, 45/99826
Int. Cl. G03c *1/68*
U.S. Cl. 96—115 R **1 Claim**

This invention is concerned with a photosensitive composition having, as a pendant, α-phenyl cinnamylidene- acetyl group of the generic formula:



3,767,416

PAUNCH MANURE TREATMENT PROCESS

Kyu-Yawp Lee, 766 Leakwood Dr., Omaha, Nebr.

Filed July 10, 1972, Ser. No. 269,949
Int. Cl. A23k *1/00*; A23j *3/00*
U.S. Cl. 99—2 R **4 Claims**

The conversion of Paunch Manure into a valuable and useful product and the reduction of highly undesirable odors therefrom by treating it with a mixture of tricholroacetic acid, hydrochloric acid, sodium lauryl sulfate and heat.

3,767,417

METHOD OF ROASTING COFFEE

Ali R. Touba, Minneapolis, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Feb. 16, 1970, Ser. No. 11,855
Int. Cl. A23f *1/02*
U.S. Cl. 426—523 **5 Claims**

A method is disclosed in which coffee beans are roasted between a pair of heated surfaces which exert a compressive force on the beans sufficient to reduce the thickness of the beans but less than that necessary to crush the beans. The compressive force, generally, will be from 200 to 1,000 pounds per square inch. The roasting temperature generally will be from 400° to 650° F. and the roasting period generally will be from 2 to 40 seconds. The roasting method may be carried out in an open system at atmospheric pressure or in an enclosed system at an elevated gaseous pressure.

3,767,418

PROCESS FOR UPGRADING GREEN COFFEE

George B. Ponzoni, Spring Valley, N.Y.; Michael G. Protomastro, Woodridge, and Arthur Stefanucci, Clifton, both of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 90,198, Sept. 30, 1970, abandoned, which is a continuation-in-part of Ser. No. 835,234, June 20, 1969, abandoned. This application Sept. 28, 1971, Ser. No. 184,586
Int. Cl. A23f *1/02*
U.S. Cl. 426—461 **10 Claims**

An improved process for upgrading green coffee by contacting green coffee with water and subjecting the mixture to elevated temperatures under pressure has been discovered. The key to the present invention is to control the moisture content of the green coffee and the steam pressure contacting the coffee, thus avoiding undue expansion of the coffee bean by introducing coffee and water into a vessel pressurized by steam such that expansion is inhibited during the treatment. Expansion of the beans on discharge from the pressure vessel is also minimized by avoiding a sudden release of pressure when the beans are discharged from the vessel.

3,767,419

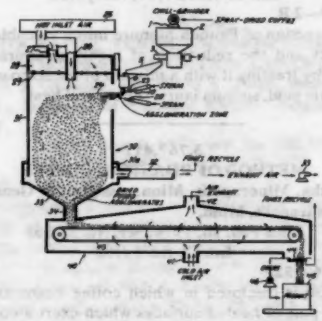
COFFEE AGGLOMERATES

Boleslaw Sienkiewicz, Pearl River, and Ferdinand A. Bagley, Scotia, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Division of Ser. No. 43,310, April 23, 1970, Pat. No. 3,695,165, which is a division of Ser. No. 693,503, Dec. 26, 1967, Pat. No. 3,554,760. This application Sept. 28, 1971, Ser. No. 184,581. The portion of the term of this patent subsequent to Jan. 19, 1988, has been disclaimed.
Int. Cl. A23f *1/08*
U.S. Cl. 426—147 **1 Claim**

Coffee agglomerates made from soluble coffee, involving the use of upper and lower jets of steam which impinge against at least one falling curtain of powder at a substantial angle so as to disrupt said curtain into agglomerates which are then wetted and redirected into a drying zone. The purpose of the upper jets of steam is to form agglomerates of varying size,

density, and moisture content whereas the purpose of the lower jets of steam is to further wet the agglomerates and



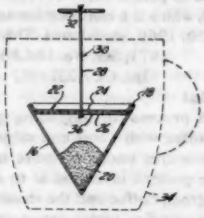
render them more uniform in density, size and moisture content while insuring that all of said agglomerates are projected into the drying zone.

3,767,420

ARTICLE FOR PRODUCING A BEVERAGE

Jong-Seung Kim, Ann Arbor, Mich.

Filed Feb. 9, 1972, Ser. No. 224,810
Int. Cl. B65b *29/04, 29/02*
U.S. Cl. 426—77 7 Claims



A package for producing a beverage that includes a sealed plastic bag and at least one beverage cone in the bag. The cone can be removed from the bag and can be used to produce a beverage by contacting a liquid with the ingredients of the cone. The latter contains particulate material for making the beverage, and in a preferred embodiment ground coffee comprises the particulate material which is confined within a filter paper enclosure. A means is provided for suspending the cone in an inverted position during the time that the particulate coffee is contacted by hot water.

3,767,421

SHELF STABLE, INTERMEDIATE MOISTURE DOUGHS

Clayton O. Gulstad, Coon Rapids; Timothy C. Heitke, Hamel, and William M. Dreier, Jr., Minneapolis, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Jan. 19, 1971, Ser. No. 107,832
Int. Cl. A21d *15/00*
U.S. Cl. 426—153 21 Claims

Dough compositions having an intermediate moisture level of about 18 to 28 percent by weight of the composition and prolonged shelf life. Part of the amylaceous component in these doughs is gelatinized and part is ungelatinized.

3,767,422

SHELF STABLE, PARTIALLY BAKED DOUGH COMPOSITION

James B. Levitz, St. Paul, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Jan. 19, 1971, Ser. No. 107,835
Int. Cl. A21d *8/00, 2/36*
U.S. Cl. 426—152 7 Claims

Dough compositions are prepared which are stable under non-refrigerated conditions for months. The compositions have moisture levels between about 18 percent and 24 percent, contain pregelatinized starch and a cereal component comprising over-worked gluten, are chemically leavened and are partially baked.

3,767,423

LOW CALORIE BREAD

Kostas Tsantir, Minneapolis, and Roger A. Gorman, Hopkins, both of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Feb. 3, 1971, Ser. No. 112,198
Int. Cl. A21d *13/06, 13/04, 2/36*
U.S. Cl. 426—62 11 Claims

A low calorie bread is prepared by employing as a replacement of a portion of the conventional dough ingredients, a mixture of finely divided edible hulls of vegetable origin comprising a mixture of rice hulls and soy bean hulls.

3,767,424

METHOD OF SELECTIVE SEPARATION OF KONJAC FLOUR FROM THE TUBERS OF AMORPHOPHALLUS KONJAC

Manzo Shimizu, Onomichi, and Hideo Shimahara, Mihara, both of Japan, assignors to Kabushiki Kaisha Shimizu Manzo Shoten, Onomichi-shi, Japan

Filed Sept. 14, 1971, Ser. No. 180,405
Int. Cl. A21d *2/00, 6/00*
U.S. Cl. 426—372 8 Claims

A method of extracting konjac flour from the tubers of Amorphophallus konjac, wherein, in producing konjac flour by the wet comminution of the tubers of Amorphophallus konjac, the konjac flour separated after the comminution operation is submitted to further polishing to remove the tachiko (dust from Amorphophallus konjac) which adheres to the surface of the konjac flour.

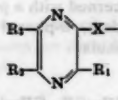
3,767,425

PROCESS FOR FLAVORING FOODSTUFFS WITH 2-ETHYL-3-METHOXYPYRAZINE AND PRODUCTS PRODUCED THEREBY

Thomas H. Parliment, Valley Cottage; Martin F. Epstein, Pearl River; William P. Clinton, Monsey, all of N.Y.; Richard Scarpellino, Ramsey, N.J., and Robert J. Soukup, New City, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Aug. 29, 1969, Ser. No. 854,306
Int. Cl. A23l *1/00*; A23l *1/26*; C07d *51/76*
U.S. Cl. 99—65 6 Claims

Enhancement of coffee flavored foodstuffs is achieved by the addition of a small but effective amount of one or more compounds corresponding to the general formula



wherein X is oxygen or sulfur, R is a lower alkyl, preferably having one to three carbon atoms, and R_1, R_2 and R_3 are hydrogen or an alkyl of one to 12 carbon atoms provided that at least one of R_1, R_2 and R_3 is alkyl of two to 12 carbon atoms.

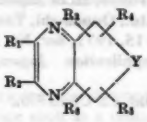
3,767,426

HETEROCYCLIC PYRAZINE FLAVORING COMPOSITIONS AND PROCESSES

William J. Evers, Long Branch; Ira Katz, Elberon; Richard A. Wilson, Edison, and Ernst T. Theimer, Rumson, all of N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

Division of Ser. No. 34,583, May 4, 1970, Pat. No. 3,647,792. This application Sept. 7, 1971, Ser. No. 178,387
Int. Cl. A23l *1/22*
U.S. Cl. 426—222 9 Claims

Processes for altering the flavors of products, including foodstuffs and tobaccos, which comprise adding thereto a small but effective amount of at least one heterocyclic pyrazine having the formula:



wherein Y is —O—, —S—, —CH_2—O—, or CH_2—S—, and R_1, R_2, R_3, R_4, R_5 and R_6 are the same or different and represent hydrogen and lower alkyl; the products so produced; flavoring and flavor-enhancing compositions containing such heterocyclic pyrazines; and novel heterocyclic pyrazines and processes for their production.

3,767,427

COMPOSITIONS USEFUL FOR IMPARTING A DEEP FAT FRIED AROMA AND FLAVOR TO FOODS

Stephen S. Chang, 29 Gloucester Ct., East Brunswick, N.J., and William A. May, 853 W. Brightstar St., Thousand Oaks, Calif.

Filed Sept. 14, 1971, Ser. No. 180,514
Int. Cl. A23l *1/26*
U.S. Cl. 426—175 3 Claims

Unsaturated gamma lactones, including those unsaturated gamma lactones having from about C_7 to about C_{10} carbon atoms with a single double bond, such as at either the 2 or 3 position, have been found to impart a deep fat fried aroma and flavor to foods when incorporated or added thereto in almost trace amounts, such as an amount in the range from about 0.5 to about 10 ppm by weight. Particularly useful are 4-hydroxy-2-nonenoic acid, lactone and 4-hydroxy-3-nonenoic acid, lactone which per se show a strong, sweet coconut and fried food odor. Mixtures of unsaturated gamma lactones or mixtures of unsaturated gamma lactones in combination with other compounds, such as 2,4-decadienal and unsaturated delta lactones, are useful to impart a deep fat fried aroma and flavor to foods. The above compounds can be added to various foods including substantially fat-free foods as well as various edible oils and margarine.

3,767,428

PROCESS OF FLAVORING OF FOODSTUFS WITH 2-ACETYL-3-ETHYLPYRAZINE

Braja D. Mookherjee, Matawan; Christopher Giacino, Califon; Elizabeth A. Karoll, Old Bridge, and Manfred H. Vock, West Orange, all of N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

Division of Ser. No. 60,740, Aug. 30, 1970, Pat. No. 3,711,482. This application Dec. 2, 1971, Ser. No. 204,332
Int. Cl. A23l *1/26*; C07d *51/76*
U.S. Cl. 426—65 2 Claims

2-Acetyl-3-ethylpyrazine; processes for altering the flavor of consumable materials, particularly foodstuffs, which comprise adding such pyrazine to the material; the products so produced; flavoring and fragrance compositions utilizing such pyrazine; and processes for producing such pyrazine.

3,767,429

LARD FLAVOR CONCENTRATE

Claude E. Burke, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 99,674, Dec. 18, 1970, abandoned. This application Dec. 6, 1971, Ser. No. 208,031
Int. Cl. A23d *3/00*; A23l *1/26*
U.S. Cl. 426—65 10 Claims

A lard flavor concentrate comprising from 1.4 percent to 4 percent by weight of the 2,4-nonadienal, from 3.5 percent to 8 percent by weight of 2,4-decadienal, from 3 percent to 5 percent by weight of 2,5-dimethyl-3-ethyl pyrazine, from 0.1 percent to 0.5 percent by weight of tetramethylpyrazine, and from 6 percent to 30 percent by weight of pyroligneous acid, and the balance comprising an edible dispersant such as glyceride oils, propylene glycol, triacetin, and the like. The combination of the above-mentioned aldehydes, pyrazines and pyroligneous acid each within its carefully prescribed range, provides a lard flavor concentrate which, when added to vegetable oil at a level of from 25 to 250 ppm, give the vegetable oil the flavor and aroma of lard.

3,767,430

PROCESS FOR FIXING VOLATILE ENHANCERS IN SUCROSE

Ernest L. Earle, Jr., New City; Esra Pitchon, Flushing; Marvin Schulman, Monroe, and Ravi Prasad, Middletown, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 24, 1972, Ser. No. 216,812
Int. Cl. A23l *1/26*
U.S. Cl. 426—380 20 Claims

Volatile enhancer, such as acetaldehyde, is mixed with a high concentration aqueous sucrose solution. The mixture is cooled to effect crystallization of the sucrose in the presence of the enhancer. The crystalline slurry is partially dried to a pasty consistency of about 12 percent moisture content and blended with crystalline sucrose to further reduce its moisture content. The blended material is then dried to a stable moisture level.

3,767,431

POLISHING COMPOSITION

Henry A. Copeland, 2259 Morris Ave., Bronx, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,668
Int. Cl. C09d *1/14*
U.S. Cl. 106—8 6 Claims

A polishing composition is provided containing burnt oil or peanut oil, wood alcohol and varnish remover.

3,767,432

PRODUCTION OF P_2O_5-SiO_2 PRODUCTS

Ian M. Thomas, Temperance, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 8, 1971, Ser. No. 132,581
Int. Cl. C03c *3/06*, *3/04*
U.S. Cl. 106—52 10 Claims

A method is provided for producing homogeneous oxide products of phosphorus and silicon such as, for example, a P_2O_5 and SiO_2 glass by a process which comprises: forming a clear solution of a soluble, substantially linear, further polymerizable polymer having phosphorus-oxygen-silicon linkages by intimately contacting phosphorous acid, phosphoric acid, phosphorus pentoxide, or mixtures thereof, with a single phase solution of an at least partially hydrolyzed silicon alkoxide, converting the solution of said further polymerizable polymer to a gel in the presence of a sufficient quantity of water to cross-link said polymer, then removing free liquid components from the gel and thermally degrading

the residue to a homogeneous oxide product. This oxide product may be converted to a substantially unitary shape by conventional melting techniques or by conventional sintering techniques. The product may, accordingly, be used as an additive in conventional glass melting operations to supply at least a portion of the silica and P_2O_5 requirement or the product may be compacted and suitably fired, for example sintered, into a substantially unitary solid body, which body is an excellent target in sputtering applications for forming films on semiconductive materials such as, for example, silicon chips.

3,767,433

CEMENT COMPOSITIONS AND METHODS

Walter J. Haldas, and Jesse A. Faust, both of Houston, Tex., assignors to Lone Star Cement Corporation, Houston, Tex.

Filed Jan. 25, 1971, Ser. No. 109,606
Int. Cl. C04b 7/02
U.S. Cl. 106—89 21 Claims

A "basic" cement of enhanced properties particularly useful in the cementing of wells, methods of making it, and methods of cementing geologic formations traversed by well bores are disclosed. The cement composition comprises a hydraulic cement intimately pretreated with a small amount of water and aged or cured for at least 30 minutes. The preferred amount of water is from about 0.5 percent to about 1.0 percent by weight of the cement; although higher and lesser amounts of water may be used. As much as about 5% water is satisfactory if the aged cement is used within a relatively short period of time, but there should not be enough water added to provide substantial lumping or hydration of the cement. The "basic" cement composition when pretreated with water has good compatibility with various additives, retarders and the like, good viscosity and strength, increased thickening times, and a reduced amount of mix water may be used thereby increasing the weight of the cement slurry.

The method of preparing the cement composition includes pretreating a hydraulic cement by intimately mixing, preferably with a fine spray, a small amount of water, as indicated in the amounts above, and aging or curing for at least 30 minutes before use. The water can also be incorporated in the cement by adding the small amount of water to an inert carrier, such as Diatomaceous silica then intimately mixing the carrier with the cement and aging or curing for at least 30 minutes. The method includes adding various additives as desired, such as retarders and the like.

The method of performing cementing operations in geologic formations comprises placing the cement composition in such formations for bonding and plugging purposes. There are a number of examples disclosed giving the cement composition, and methods of making and using it.

3,767,434

METHOD OF PREPARING P_2O_5-SiO_2 PRODUCTS

Ian M. Thomas, Temperance, Mich., assignor to Owens-Illinois Inc., Toledo, Ohio

Filed Apr. 8, 1971, Ser. No. 132,583
Int. Cl. C03c 3/04, 3/06
U.S. Cl. 106—52 9 Claims

A method is provided for producing high purity oxide products of phosphorus and silicon such as, for example, a P_2O_5 and SiO_2 glass wherein a silicon alkoxide is directly reacted with phosphorous acid, phosphoric acid, phosphorus pentoxide, or mixtures thereof, in the absence of any addition of a separate hydrolysis catalyst to produce a single phase solution reaction product and this reaction product with water is converted to a two-phase system, which two-phase system is removed of its free liquid components and the residue is then thermally decomposed to produce a product of phosphorus and silicon. This oxide product may be converted to a substantially unitary shape by conventional melting techniques or by conventional sintering techniques. The product may be used as an additive in conventional glass melting operations to supply at least a portion, and preferably all, of the P_2O_5 and/or silica requirements of the batch or the product may be compacted and suitably fired into a substantially unitary body, which body is an excellent target in sputtering applications for forming films on semiconductive materials such as, for example, silicon chips.

3,767,435

RAPID HARDENING PORTLAND CEMENT CLINKER COMPOSITION

Shigejiro Mori, Kawasaki; Hiroshi Uchikawa, Funabashi, and Shunichiro Uchida, Tokyo, all of Japan, assignors to Onoda Cement Company, Ltd., Onoda-shi, Yamaguchi, Japan

Filed Dec. 15, 1971, Ser. No. 208,069
Claims priority, application Japan, Dec. 28, 1970, 45/120520
Int. Cl. C04b 7/02
U.S. Cl. 106—89 4 Claims

A rapid hardening portland cement comprising 40 – 60 percent by weight of $11CaO \cdot 7Al_2O_3 \cdot CaF_2$ phase and 30 – 50 percent by weight of $3CaO \cdot SiO_2$ solid solution phase as the main mineral composition thereof and a process for manufacturing it.

3,767,436

CEMENT SET ACCELERATOR

Richard B. Peppler, and Philip A. Rosskopf, both of South Euclid, Ohio, assignors to Martin Marietta Corporation, New York, N.Y.

Filed Sept. 9, 1971, Ser. No. 179,240
Int. Cl. C04b 7/02, 13/24, 13/26
U.S. Cl. 106—90 28 Claims

The rate of hardening of a portland cement mix is accelerated by the addition of a low molecular weight, water-soluble hydroxylated adduct formed by reacting melamine and an aldehyde. The adduct is employed in an amount within the range of from about 0.01% to about 1.00%, preferably from about 0.2% to about 0.8% by weight of cement. The water content of the cement mix for a given consistency tends to be lowered by the incorporation of the adduct, providing an additional advantage from the practice of the invention. The adduct may be employed as a concentrated solution in water and may be used in combination with known set accelerating agents and with set retarding agents where reduction in water content is desired without appreciable change in the rate of set of the cement mix.

3,767,437

PHOSTHETIC STRUCTURES DERIVED FROM COLLAGEN

Mamerto M. Cruz, Jr., Pennington, N.J., assignor to Avicon, Inc., Ft. Worth, Tex.

Continuation-in-part of Ser. No. 823,959, May 12, 1969, abandoned. This application Oct. 20, 1971, Ser. No. 190,817
Int. Cl. C08h 7/06, 17/04
U.S. Cl. 106—161 10 Claims

Artificial ivory and bone-like structures are formed from a complex partial salt of collagen with a metal hydroxide and with an ionizable acid such as calcium hydroxide and phosphoric acid. Calcium phosphate may be intimately mixed with the complex partial collagen salt before shaping into a desired configuration. Structural strength may be increased by incorporating fibers and other ions may be included to increase hardness.

3,767,438

OHMIC CONTACT AND COMPOSITION

William Otto Giesfeldt, Milwaukee, and Roy Lee Pinnow, Wauwatosa, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Division of Ser. No. 55,012, July 15, 1970, which is a division of Ser. No. 794,020, Jan. 27, 1969, Pat. No. 3,588,636. This application Dec. 10, 1971, Ser. No. 206,960

Int. Cl. C08b *27/04*

U.S. Cl. 106—193 J 6 Claims

An ohmic contact may be formed on the surface of a semiconductive device such as a reduced barium titanate by applying to the surface of a semiconductor a layer of a composition containing a reducible composition of nickel and indium and then firing the device at a liquified temperature under reducing conditions.

3,767,439

FUNCTIONAL SURFACE COATING COMPOSITIONS FOR CELLULOSIC MATERIAL

Ronald C. Moyer, 56 Spring Rd., North Kingstown, R.I., and Melville W. Uffner, 405 Linden Ave., Media, Pa.

Continuation-in-part of Ser. No. 885,314, Dec. 15, 1969, Pat. No. 3,664,987. This application Jan. 31, 1972, Ser. No. 222,329

Int. Cl. C08b *25/02*; C08d *7/00*; C08f *45/24*

U.S. Cl. 106—210 3 Claims

Functional surface coating compositions, prepared by blending a mixture of a fluorine-containing phosphate material and a non-fluorine-containing material in aqueous medium, impart solvent, grease and oil resistance to cellulosic materials.

3,767,440

DEXTRIN-CLAY-SILICATE ADHESIVE

Donald J. Olix, Fairport Harbor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Apr. 24, 1972, Ser. No. 246,718

Int. Cl. C08b *25/02*, *27/06*

U.S. Cl. 106—214 2 Claims

An adhesive composition in the form of a stable dispersion, and comprising of a mixture of about 80–92 percent of an aqueous alkali metal silicate, about 1.5–6 percent dextrin or modified dextrin, and about 4.5–12 percent of a clay slurry. The clay slurry is formed by blending from about 0.25 to about 1.0 parts of a swelling type clay, from 0 to about 1.0 parts by weight of a kaolin type clay, and 6 parts by weight of water. The novel compositions are prepared by heating a mixture of the alkali metal silicate and the clay slurry to a temperature of about 160°F., then adding the dextrin and maintaining the mixture at about 160°F. for a period of at least 10 minutes after all of the dextrin has been added. The novel compositions may also contain additional kaolin type clay and/or a small amount of starch, as well as stabilizers and viscosity control agents of the type well known to those skilled in the art.

3,767,441

HOLD-DOWN COMPOSITION FOR MACHINING ARTICLES

Robert W. Shepard, San Diego, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Division of Ser. No. 741,287, July 1, 1968, Pat. No. 3,586,559. This application Jan. 25, 1971, Ser. No. 109,694

Int. Cl. C08h *9/06*, *17/24*

U.S. Cl. 106—272 2 Claims

A composition for adhering a workpiece to a workholder while a machining operation is performed is disclosed. The composition comprises 10–25 percent by weight of activated charcoal, 1–10 percent by weight of a plasticizer and the balance of a hold-down type wax such as o-terphenyl or paraffin. A method of mixing the ingredients of the composition, applying the mixture to the workpiece and removing same when the work function is completed is also disclosed.

3,767,442

PHTHALOCYANINES

Jean Andre Paul Kienzle; Michel Ernest Antoine Huille, both of Creil, and Louis Antoine Cabut, Nogent S/Oise, all of France, assignors to Ugine Kuhlmann, Paris, France

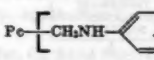
Filed Nov. 22, 1971, Ser. No. 201,201

Claims priority, application France, Nov. 20, 1970, 7041759

Int. Cl. C08h *17/14*

U.S. Cl. 106—288 Q 13 Claims

A phthalocyanine pigment mixture which contains a compound of the formula:



(I)

in which Pc represents a phthalocyanine residue, the benzene nucleus A is substituted by at least one alkyl group having up to four carbon atoms, and *n* is a whole number from 1 to 4; process for the stabilisation of phthalocyanine pigments which comprises incorporating therewith at least one compound of formula (I); and paints, lacquers, enamels and plastic materials coloured by means of a phthalocyanine pigment mixture containing a compound of formula (I).

3,767,443

PIGMENTS

David William Harold Clark, Leigh-on-Sea, and Terence Leslie Threlfall, London, both of England, assignors to May & Baker Limited, Essex, England

Division of Ser. No. 758,056, Sept. 6, 1968, Pat. No. 3,627,553. This application Oct. 18, 1971, Ser. No. 190,406

Claims priority, application Great Britain, Sept. 8, 1967, 41,182/67

Int. Cl. C09c

U.S. Cl. 106—291 20 Claims

The invention provides novel nacreous pigments comprising a plurality of high refractive index layers of titanium or zirconium dioxide or of an alkaline earth metal titanate separated by one or more layers of lower refractive index of an organic film-forming substance or of an inorganic oxide or hydroxide. These pigments are made by successively depositing the various layers on a support, stripping the product from the support and comminuting it.

3,767,444
PIGMENT COMPOSITION FOR COLORING POLYPROPYLENE

Robert Zeisberger, Besigheim, Germany, assignor to G. Siegle & Co. GmbH, Stuttgart, Germany

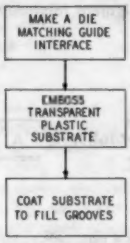
Filed Dec. 1, 1971, Ser. No. 203,857
Int. Cl. C08f 45/04, 45/14
U.S. Cl. 106—308 R **12 Claims**

Polypropylene is colored readily and homogeneously by adding to the molten polymer a pigment composition consisting of polypropylene wax as a carrier, a pigment dispersed in the carrier, and a non-ionic dispersing agent in an amount sufficient to disperse the pigment in the wax at a temperature above the melting point of the latter. Many pigments and dispersing agents stable at the melting temperature of polypropylene for a period sufficient to permit dispersing the pigment in the molten polymer are commercially available.

3,767,445
EMBOSSING TECHNIQUES FOR PRODUCING INTEGRATED OPTICAL CIRCUITS

Edwin Arthur Chandross, Berkeley Heights; Walter John Tomlinson, III, Holmdel; Reinhard Ulrich, Matawan, and Heinz Paul Weber, Middletown, all of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Oct. 14, 1971, Ser. No. 189,101
Int. Cl. B44c 1/22
U.S. Cl. 117—8 **7 Claims**



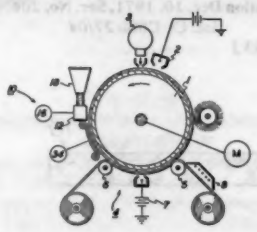
There is disclosed a technique for producing integrated optical waveguides or circuits in which a substrate is embossed by a die of the desired guide pattern and is then coated with a liquid that fills the grooves and has sufficient surface tension to yield a greater thickness in the grooves than over adjacent substrate material. The liquid may be a solution of a higher-index optical material, solidifying in the grooves during evaporation of the solvent. Alternatively, a liquid monomer of a polymerizable higher-index material may be used which is subsequently polymerized in the grooves. This embossing and filling technique is particularly economical when a large number of replicas of a given optical circuit are to be produced.

3,767,446
DEVELOPMENT METHOD WITH OSCILLATING BRUSH PAD

Ernest A. Weiler, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 838,952, June 30, 1969, Pat. No. 3,670,701. This application Sept. 15, 1971, Ser. No. 180,594
Int. Cl. G03g 13/08, 15/08
U.S. Cl. 117—17.5 **3 Claims**

A method for developing a latent electrostatic image with electroscopic material wherein development is effected by utilizing a biased toner cloud generator for conveying developer to the image bearing surface and an oscillating brush pad mounted adjacent to and conforming to the shape of the surface to enhance the development of the image. A cloud of toner is generated by oscillating a container supporting developer to release charged toner therefrom and the

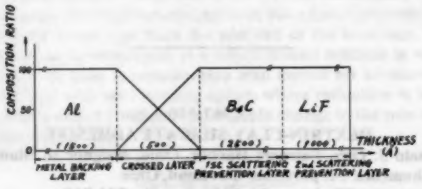


cloud thereupon contacts the image bearing surface. By then oscillating the brush pad on the surface, toner affixed to the non-image background areas is redistributed to the image to produce a high quality developed image.

3,767,447
ELECTRON SCATTERING PREVENTION FILM AND METHOD OF MANUFACTURING THE SAME

Hideaki Mizuno, Tokyo, and Naoki Akiyama, Kanagawa, both of Japan, assignors to Victor Company of Japan, Ltd., Kanagawa-ken, Japan

Filed Apr. 16, 1971, Ser. No. 134,653
Claims priority, application Japan, Apr. 17, 1970, 45/32837
Int. Cl. H01j 1/68
U.S. Cl. 117—33.5 CP **4 Claims**



An electron scattering prevention film in disclosed comprising at least the following three layers: an electrode layer deposited on a phosphor layer; a first electron scattering prevention layer deposited on the electrode layer composed of a first electron scattering prevention material having a smaller atomic number than that of the material constituting the electrode layer; and a second electron scattering prevention layer deposited on the first electron scattering prevention layer composed of a second electron scattering prevention material having a smaller atomic number than that of the material constituting the electrode layer. A bimetal action which occurs between the electrode layer and the first electron scattering prevention layer is cancelled by a bimetal action which occurs between the first electron scattering prevention layer and the second electron scattering prevention layer whereby the elec-

tron scattering prevention film is prevented from being distorted to an extent that the electrode layer peels off from the phosphor layer under variation of temperature.

3,767,448

PHOTOGRAPHIC PROCESS

Philip F. Hutton, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 29, 1971, Ser. No. 203,014
Int. Cl. B44d *1/094;* G03c *1/32*
U.S. Cl. 117—34 7 Claims

A photographic element having improved matting properties is prepared by deionizing or deashing an aqueous gelatin solution containing at least about 5 percent by weight gelatin and then adding a matting agent which comprises discrete particles of a polymer containing free carboxyl groups to the resulting aqueous gelatin solution. The resulting gelatin solution containing the matting agent can be employed with other addenda employed in photographic materials. Deionizing can be carried out by passing the aqueous gelatin solution through an ion-exchange resin or deashing can be effected by washing the gelatin solution with an aqueous acid solution.

3,767,449

RECORDING SHEET

Takao Hayashi; Hajime Kato, and Akio Miyamoto, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sept. 28, 1971, Ser. No. 184,608
Claims priority, application Japan, Sept. 28, 1970, 45/84539; Dec. 15, 1970, 45/112039; Dec. 15, 1970, 45/112040
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 15 Claims

A recording sheet comprising a support having coated thereon a layer of a color developer which is capable of forming a distinct color when contacted with a color former. The color developer contains a combination of (i) a polymer of an aromatic carboxylic acid having at least one hydroxyl group with an aldehyde or acetylene and (ii) a metallic compound.

3,767,450

METHOD OF MANUFACTURING HECTOGRAPHIC PAPER

Wladislas Popiolek, Harlow, England, assignor to Kores Manufacturing Company Limited, Harlow, Essex, England

Continuation of Ser. No. 838,647, July 2, 1969, abandoned. This application Oct. 6, 1971, Ser. No. 187,202
Int. Cl. B41m *5/10*
U.S. Cl. 117—36.1 8 Claims

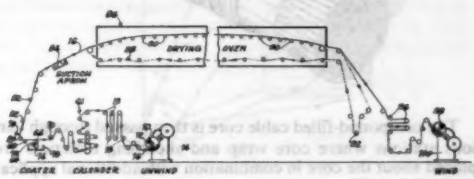
The invention is concerned with hectographic paper. The paper is produced by coating a substrate with a dye composition prepared by contacting a dye with a volatile solvent to at least partially dissolve it and mixing the solution with a volatile non-solvent. In the solution any particles of undissolved dye must be 10 microns or less. After coating the volatile constituents are evaporated. The method can produce hectographic paper in which the coating comprises from 20 to 100 percent dye. Those with from 95 to 100 percent dye have not been prepared by previous methods.

3,767,451

METHOD FOR MANUFACTURE OF MANIFOLDING PAPER COATED WITH PRESSURE RUPTURABLE MATERIALS

Thomas W. Busch, Appleton, Wis., assignor to Appleton Papers Inc., Appleton, Wis.

Continuation-in-part of Ser. No. 795,663, Jan. 31, 1969, Pat. No. 3,632,378. This application Nov. 10, 1971, Ser. No. 197,455. The portion of the term of this patent subsequent to Oct. 27, 1987, has been disclaimed.
Int. Cl. B41m *5/22*
U.S. Cl. 117—36.2 3 Claims



Paper coated on or off the paper machine with pressure rupturable materials which includes calendering the paper immediately before application of the aqueous emulsion coating containing the pressure rupturable materials.

3,767,452

FLAMEPROOFING COMBUSTIBLE SHEET MATERIALS

Alfred E. Lauchenauer, Thurgau, Switzerland, assignor to Raduner and Co., A.-G., Horn, Switzerland

Filed Feb. 7, 1972, Ser. No. 224,346
Claims priority, application Great Britain, Feb. 12, 1971, 4,552/71
Int. Cl. B44d *5/00;* C09k *3/28*
U.S. Cl. 117—37 R 16 Claims

A flameproofing agent is applied to combustible sheet material in a pattern in which small areas of high concentration of flameproofing agent are distributed substantially uniformly on the sheet material and alternate with areas of low to zero concentration of the flameproofing agent.

3,767,453

METHOD OF DEPOSITING A HIGH SURFACE AREA ALUMINA FILM ON A RELATIVELY LOW SURFACE AREA SUPPORT

James Hoekstra, Evergreen Park, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed June 30, 1971, Ser. No. 158,589
Int. Cl. B01j *11/46;* B44d *1/44*
U.S. Cl. 117—46 CA 8 Claims

A relatively low surface area honeycomb-type ceramic support is impregnated with an alumina sol containing as a soluble plasticizer at least about 5 wt. percent of a polyethylene glycol having an average molecular weight from about 200 to about 3000. The support is thereafter calcined to form a uniformly thin, high surface area alumina film thereon.

3,767,454

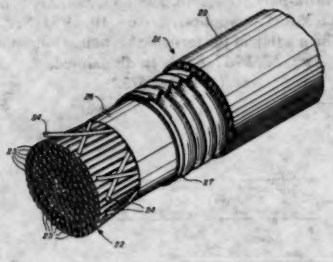
METHODS OF MANUFACTURING WATERPROOF CABLE

Edward L. Franke, Jr., Perry Hall, and William J. Hyde, Baltimore, both of Md., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed June 21, 1971, Ser. No. 155,055
Int. Cl. H01b *13/06;* B05c *3/12*
U.S. Cl. 117—61 5 Claims

A cable core having stranded twisted pairs of insulated con-

ductors is moved axially through a series of in-line chambers having interconnecting dies to facilitate the evacuation of air from voids of the interstitial structure of the core and the pressure-application of a waterproofing compound of jelly-like consistency into the air-evacuated voids.



The compound-filled cable core is then passed through various stations where core wrap and sheathing materials are placed about the core in combination with additional applications of the waterproofing compound. A plastic jacket is extruded about the sheathing and is cooled prior to take-up of the jacketed cable onto a reel.

3,767,455

TREATMENT OF OXIDE PIGMENTS

Maurice Arthur Claridge, Waltham, Grimsby, and Peter Lyndon Cowe, Cleethorpes, both of England, assignors to Laporte Industries Limited, London, England

Filed Jan. 8, 1971, Ser. No. 105,114

Claims priority, application Great Britain, Jan. 15, 1970, 1,984/70

Int. Cl. B44d *1/44*

U.S. Cl. 117—65.2 **11 Claims**

Titanium dioxide pigment is coated with one or more substances selected from hydroxides, hydrous oxides, phosphates, and basic sulphates, and the coated pigment is subjected to hydrothermal pressure treatment by being maintained at a temperature of at least 50°C. in contact with liquid water, with a total ambient pressure of greater than one atmosphere.

3,767,456

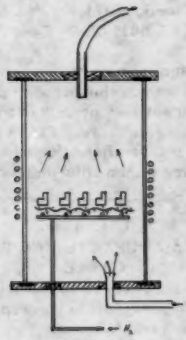
CHEMICAL VAPOR DEPOSITION OF STEEL WITH TANTALUM AND COLUMBIUM

Frederick A. Glaski, Pacoima, Calif., assignor to Fonsteel Inc., North Chicago, Ill.

Filed Sept. 7, 1971, Ser. No. 177,929

Int. Cl. C23c *11/02*, *11/04*; C23f *17/00*

U.S. Cl. 117—71 M **11 Claims**



A process for cladding of steels and the resulting product. A consistent and acceptable bond is obtained by providing a containment coating to prevent diffusion of the ingredients of the substrate into the cladding material. A desirable containment coating is one in which one of the constituents is provided by the substrate to provide a composite which is more stable than similar compounds of the cladding coat such as tantalum or columbium. This permits a chemical vapor deposition of the cladding without adverse reaction with surface ingredients. A further step in the process is available in the localizing of flow of gas in the deposition to bring them together just prior to contact with the shape to be coated.

3,767,457

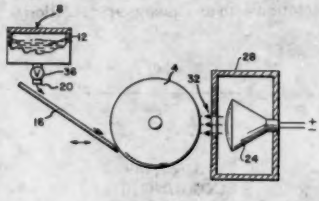
METHOD OF COATING RIGID CORES

Bruce W. Hubbard, Jr., Oak Park, Ill., and Clifton L. Kehr, Silver Spring, Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation of Ser. No. 879,175, Nov. 24, 1969, abandoned. This application Nov. 19, 1971, Ser. No. 200,339

Int. Cl. B44d *1/50*; C08f *1/18*, *3/38*

U.S. Cl. 117—93.31 **16 Claims**



Industrial rollers are prepared by photocuring a layer of photocurable composition on the rigid core. As the core cylinder is rotated, a thin layer of photocurable composition is fed intermittently or continuously onto the rotating cylinder, where it can optionally be smoothed by a doctor blade. The photocurable composition preferably is photocured by an ultraviolet light source which is located on the cylinder side opposite the place where the photocurable composition is applied so that premature hardening does not occur in the feed stock. Multiple, consecutive layers of photocurable composition can be built up on the rigid core, each (after the first) being placed upon a partially hardened photocured sublayer. In this manner, the photocured material on the rigid core can be built up to any desired and practical thickness. The photocured surface of the roller can be ground and buffed to make a final product of accurately controlled dimensions.

3,767,458

PARTICULATE REFRACTORY MATERIAL COATED WITH A NEGATIVE SILICA SOL SETTING AGENT

Earl P. Moore, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 49,915, June 25, 1970, abandoned. This application June 1, 1971, Ser. No. 148,959

Int. Cl. C04b *35/68*; B22c *1/00*

U.S. Cl. 117—100 S **5 Claims**

A rapid process for forming a refractory laminate on the surface of a support structure which comprises dipping the structure in a bath comprising a sol of negatively charged colloidal particles of an inorganic substance and/or a solution of an alkaline ionic silicate to form a layer on the surface, contacting the layer on the surface with refractory stucco grains containing a setting agent to firmly set the colloidal silica or silicate and the stucco grains. This procedure is repeated until a laminate of the desired thickness is built up on the surface. Interaction between the negatively charged colloidal particles or silicate and the stucco grain-setting agent mixture results in the polymerization of the silica or silicate and thereby the im-

mobilization of the coatings. This technique makes it possible to successively apply and set coatings to build refractory laminates in very short times without intermediate drying and without sloughing of coats. The process is particularly suited for making expendable, refractory shell molds for precision investment casting of metals by the so-called "lost-wax" technique.

3,767,459

METHOD FOR MAKING ELECTRON ENERGY SENSITIVE PHOSPHORS FOR MULTI-COLOR CATHODE RAY TUBES

Jack D. Kingsley, and Jerome S. Prener, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 843,401, July 22, 1969, Pat. No. 3,664,862. This application Sept. 27, 1971, Ser. No. 184,292
Int. Cl. B44d 5/00; C09k 1/12
U.S. Cl. 117—100 B 8 Claims

A method is disclosed for making multi-component phosphor structures whose emission color depends on the energy of the electrons used to excite them. The method comprises the mixing of two or more component phosphors, each component phosphor having particles with non-luminescent interior core regions and non-luminescent exterior surface regions separated by a luminescent region, the region dimensions and emission color of each component being distinct. These structures are formed by diffusing activating and/or coactivating impurities partially into the particles, or by growth of activated material on the outside of non-luminescent material, and by the subsequent diffusion of luminescence killing impurities partially into the luminescent region.

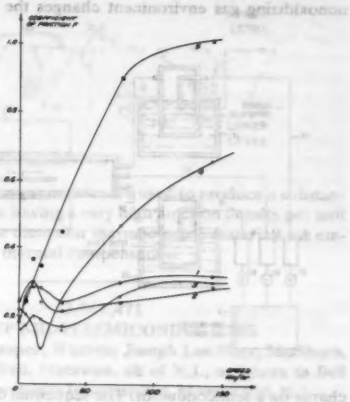
3,767,460

METHOD OF DECREASING THE WEAR OF FLEXIBLE BODIES RUBBING ON A RIGID SURFACE

Michael Kennel, and Yves Drapeau, both of Le Havre, France, assignors to Compagnie Francaise De Raffinage, Paris, France

Continuation-in-part of Ser. No. 62,169, Aug. 7, 1970, abandoned. This application July 26, 1972, Ser. No. 275,359
Claims priority, application France, Aug. 8, 1969, 692055945; Belgium, July 8, 1970, 70753146; Italy, July 15, 1970, 70900585; Netherlands, July 23, 1970, 707010910
Int. Cl. C04b 41/00
U.S. Cl. 117—123 E 2 Claims

A method of decreasing wear on flexible bodies caused by rubbing on rigid surfaces is shown. The rigid surface is coated with a paraffin composition, preferably paraffin or petroleum wax. Improved stability of the composition, with time, is obtained by incorporating, in the composition, an additive such as polyethylene. The compositions are applied to rigid surfaces such as concrete by spraying or by roller application. In the former case the compressed air for the spray gun and the surface to be coated are heated. The coatings may be advantageously applied to concrete tracks upon which air cushion (hover) vehicles are guided.



3,767,461

RAPID CURING COMPOSITION AND METHOD

Ehrlich M. Eiland, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 31, 1972, Ser. No. 285,473
Int. Cl. B44d 1/36
U.S. Cl. 117—132 B 10 Claims

Use of a phytic acid catalyst in accelerated curing of thermosetting coatings.

3,767,462

METHOD FOR FABRICATION OF POLYCRYSTALLINE FILMS

Robert Dean Larrabee, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 28, 1971, Ser. No. 193,541
Int. Cl. B44d 1/48; B44c 1/18
U.S. Cl. 117—201 17 Claims

A mixture of two volatile solvent liquids and a particulate material is prepared, applied to a substrate and the liquids are evaporated from the mixture to form a film of the material on the substrate. One of the liquids has higher volatility but is a relatively poorer solvent for the material than the other liquid. Evaporation of the liquids may be followed by densification steps wherein a vaporized solvent is applied to the film and then evaporated.

3,767,463

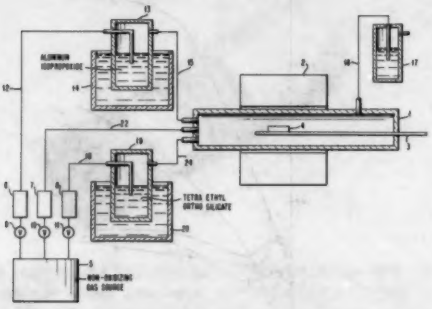
METHOD FOR CONTROLLING SEMICONDUCTOR SURFACE POTENTIAL

Joseph A. Aboaf, Peekskill, and Thomas O. Sedgwick, Crompound, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 609,200, Jan. 13, 1967, abandoned. This application Feb. 10, 1971, Ser. No. 114,369
Int. Cl. B44d 1/18
U.S. Cl. 117—215 11 Claims

A method for controlling semiconductor surface potential in which metal oxides such as silicon dioxide and aluminum oxide are deposited as a mixture or sequentially on the surface of a semiconductor such as silicon or germanium at tempera-

tures below which diffusion of constituents of the oxides normally does not occur. The deposition of the metal oxides is carried out in an nonoxidizing atmosphere such as nitrogen or forming gas. Changing the mixture of metal oxides in the nonoxidizing gas environment changes the effective surface



charge on a semiconductor. The sequential deposition of a silicon dioxide layer and an aluminum oxide layer in nitrogen with a subsequent heating step to form a mixture of metal oxides also produces changes in the effective surface charge depending on the amount of mixture formed.

3,767,464

MAGNETIC RECORDING MEMBER AND METHOD OF PRODUCING SAME

Goro Akashi; Tatsuji Kitamoto; Takeshi Katada; Yasuyuki Yamada, and Morita Kazuhiko, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 876,412, Nov. 13, 1969, abandoned. This application Feb. 17, 1972, Ser. No. 227,251

Claims priority, application Japan, Nov. 13, 1968, 43/83039

Int. Cl. H01f *10/02*

U.S. Cl. 117—237 **5 Claims**

Magnetic recording member having a high Br/Bm ratio, an excellent squareness ratio of the magnetization curve, low noise level and excellent surface smoothness, especially suitable for high density recording, produced by pressing a magnetic recording member having a magnetic recording layer which is composed of an acicular ferromagnetic alloy powder having an average length of larger than 1 micron, dispersed in a binder and being magnetically orientated in order to crush the powder having a larger particle size.

3,767,465

ELECTRO-CHEMICAL CELLS

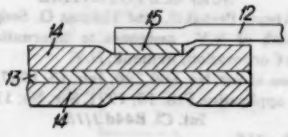
Brian Wakefield, Essex, England, assignor to The Ever Ready Company (Great Britain) Limited, London, England

Filed Sept. 24, 1971, Ser. No. 183,345

Claims priority, application Great Britain, Oct. 6, 1970, 47,495/70

Int. Cl. H01m *43/04*; **B23k** *13/00*

U.S. Cl. 136—24 **11 Claims**



A conducting metallic tag is welded to impregnated porous electrode material for an electro-chemical cell by forming a layer of sintered metal on the tag, the metal being selected so as not to interfere with the electro-chemical operation of the electrode when assembled in a cell, pressing the tag against the electrode material with the sintered metal adjacent the electrode material, and welding the two together by passage of electric current.

3,767,466

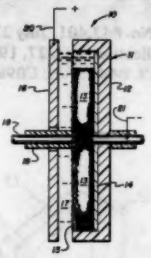
ELECTRODE STRUCTURE AND BATTERY

Lowell R. McCoy, Woodland Hills, and Laszlo A. Heredy, Canoga Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 16,203, March 3, 1970, Pat. No. 3,663,298. This application Jan. 27, 1972, Ser. No. 221,476

Int. Cl. H01m *29/04*, *35/04*

U.S. Cl. 136—131 **11 Claims**



An electrode structure for use with an electrolyte wherein an electrically conductive flowing particle bed stream within a compartment of the electrode structure establishes a plurality of electrochemical reaction sites at the interface of the particles and of the electrolyte.

The flowing particle bed electrode structure finds a preferred application as an electrode in a electrically regenerable system, particularly as a rotatable zinc electrode in zinc-nickel oxide and zinc-air secondary cells.

3,767,467

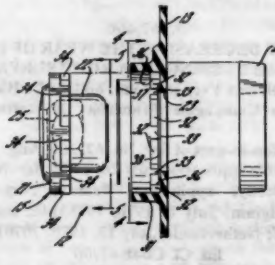
BATTERY SIDE TERMINAL ASSEMBLY

James H. Miller, and Duane D. Hakarine, both of Minneapolis, Minn., assignors to Gould Inc., Mendota Heights, Minn.

Filed Dec. 20, 1971, Ser. No. 210,079

Int. Cl. H01m *5/00*

U.S. Cl. 136—135 **3 Claims**



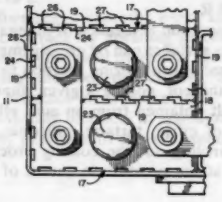
A battery side terminal assembly in which a metal terminal passes through the battery container wall and has a head portion shielded by a ring molded on the wall, with the head portion also being locked against rotation by interengaging lugs and sealed against liquid leakage by a gasket.

3,767,468

AIR-COOLED BATTERY

James B. Schusler, Brunswick Acres, N.J., assignor to Gulton Battery Corp., Metuchen, N.J.

Filed Sept. 20, 1971, Ser. No. 181,829
Int. Cl. H01m 1/00, 1/00
U.S. Cl. 136—166 10 Claims



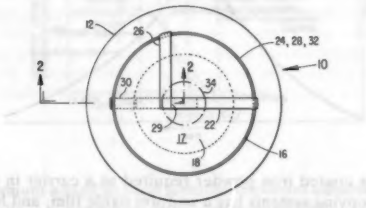
Multicell storage battery apparatus is disclosed in which each of the individual cell units within the battery is provided with a plurality of external asymmetrical grooves extending, in the preferred form, from the bottom to the top of each sidewall of the cell. The grooves of contiguous sidewalls of adjacent cells are laterally offset to form asymmetrical ventilating passages between the cells. Means are provided for conducting air through the passages to cool the battery.

3,767,469

IN-SITU OXYGEN DETECTOR

Louis R. Flais, and Ralph G. Gentile, both of Alliance, Ohio, assignors to Bailey Meter Company, Wickliffe, Ohio

Filed Sept. 1, 1971, Ser. No. 176,804
Int. Cl. H01v 1/14
U.S. Cl. 136—225 1 Claim



A measuring apparatus having a self-contained reference atmosphere and utilizing thick film thermocouples to measure the operating temperature of the detector cell. An embodiment of the detector is provided with heating means and enclosed so as to be capable of operation in a high velocity varying temperature atmosphere. In another embodiment, the operating temperature of the detector cell is measured by one thick-film thermocouple inside and another outside the closed end of the electrolyte tube of the detector. The outputs of the two thermocouples are electrically parallel connected to provide an average of the two thermocouple readings.

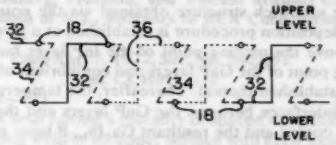
3,767,470

THERMALLY COMPENSATED HEAT FLOW SENSORS

Frank F. Hines, RFD 1, Litchfield, N.H.

Continuation-in-part of Ser. No. 706,585, Feb. 19, 1968, Pat. No. 3,607,445. This application Sept. 20, 1971, Ser. No. 181,943
Int. Cl. H01v 1/04
U.S. Cl. 136—225 6 Claims

A thermally compensated heat flow sensor having n, unitary, planar, thermoelectric elements arranged to produce $n-1$ thermo-electric junctions where the number of elements "n" is an odd number of five or more. The Thermoelectric junctions can be arranged in series, parallel, or combinational configurations. Various geometrics are used to produce a substantially planar sensor having a very high junction density per unit area. At least three dissimilar thermoelectric materials are employed to provide thermal compensation.

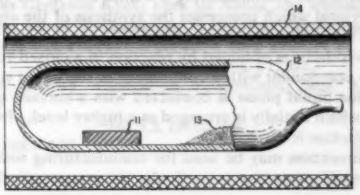


3,767,471

GROUP I-III-VI SEMICONDUCTORS

Horst Manfred Kasper, Warren; Joseph Leo Shay, Marlboro, and Benjamin Tell, Matawan, all of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Sept. 1, 1971, Ser. No. 176,862
Int. Cl. H01l 7/54
U.S. Cl. 148—1.5 19 Claims



The electrical carrier concentration of Group I-III-VI compound semiconductors containing copper as the Group I element is controlled by a heat treatment in an atmosphere containing an overpressure of one or two of the constituent elements. The p-type conductivity of these semiconductors can, by this method, be controllably varied over several decades of carrier concentration and some exemplary materials have been made usefully n-type. All compounds of the class contemplated have been found to be direct band gap semiconductors and are capable of exhibiting coherent stimulated emission when optically pumped. Using these compounds and techniques, both homojunction and heterojunction lasers are contemplated from the infrared region of the spectrum, through the visible and into the ultraviolet.

3,767,472

GROWTH OF TERNARY COMPOUNDS UTILIZING SOLID, LIQUID AND VAPOR PHASES

Richard J. Chicotka, Mahopac, and Robert C. Taylor, Katonah, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,314
Int. Cl. H01l 7/38, 7/42
U.S. Cl. 148—1.6 5 Claims

This disclosure provides a process for obtaining a ternary compound with a particular composition or with continuous range of compositions utilizing steps of a chemical vapor deposition procedure which cannot normally be obtained directly by chemical vapor deposition itself. Through the chemical vapor deposition procedure, a first layer of GaP is deposited epitaxially onto a crystalline substrate; thereafter a

layer of InP is deposited on the first GaP layer; and finally another GaP layer is deposited on the InP layer. The layers have especially good metallurgical contact with each other and are essentially free of imperfections at the interfaces. In accordance with the solid-liquid-solid procedure of the prior art, the sandwich structure obtained via the noted chemical vapor deposition procedure is established at a given temperature above the melting point of the InP layer but below the melting point of the GaP layers and equilibrium of the ensemble is established thereat. Thereafter, the temperature of one of the interfaces between the GaP layers and the InP liquid zone is cooled and the resultant $Ga_xIn_{1-x}P$ layer growth is initiated. Conveniently, a temperature gradient is imposed on the sandwhich structure ensemble and the growth of the $Ga_xIn_{1-x}P$ layer continues until the GaP layer at the higher temperature is consumed, or the growth thereof is otherwise terminated.

3,767,473

METHOD OF MANUFACTURING SEMICONDUCTOR SINGLE CRYSTALS

Michael Ayel, Caen; Jean-Pierre Besselere, Plumetot Par Douvres, and Bernard Lambert, Mathieu, all of France, assignors to U.S. Philips Corporation,, New York, N.Y.

Filed Dec. 9, 1971, Ser. No. 206,380

Claims priority, application France, Dec. 11, 1970, 7044664; Dec. 11, 1970, 7044665

Int. Cl. H01l 7/38

U.S. Cl. 148—1.6 **9 Claims**

A method of manufacturing a compound in the form of a single crystal which comprises the synthesis of the compound and the formation of a single crystal.

The synthesis is obtained by reaction in a closed space of a volatile component with a component in the liquid state after which the liquid phase is contacted with a surface of a seed crystal which initially is arranged at a higher level, after which crystallization is carried out.

The invention may be used for manufacturing rods having good crystal properties, in particular the compounds III–V.

3,767,474

SEALING METHODS AND COMPOSITIONS FOR ALUMINUM OXIDE COATINGS

Charles C. Cohn, Atlantic City, N.J., assignor to Samuel L. Cohn and Charles C. Cohn, Philadelphia, Pa.

Filed Sept. 22, 1971, Ser. No. 182,909

Int. Cl. C23f 7/06

U.S. Cl. 148—6.1 **8 Claims**

Methods and compositions are provided for dyeing and sealing, or sealing without dyeing, aluminum oxide coatings. Used for this purpose are aqueous compositions containing disodium 4-dodecylated oxydibenzene sulfonate and one or more hydrolyzable metallic salts, typically of the metals Ni, Co, Pb, Sn, Al, Cr, Cu, Mn, Fe and Bi. If dyeing is to be effected, the dye is included in the sealing composition.

3,767,475

METHOD OF OXIDIZING TIN AND TREATMENT

Walter A. Schubert, Elgin, Ill., assignor to Elgin Metal Casket Company, Elgin, Ill.

Continuation-in-part of Ser. No. 812,341, April 1, 1969, abandoned. This application Oct. 27, 1971, Ser. No. 193,150

Int. Cl. C23c 1/04; C23b 3/06

U.S. Cl. 148—6.14 **5 Claims**

A method of plating metallic articles with tin in which the tin, after plating, is treated to render it readily oxidizable. The method also includes the step of oxidizing the tin so treated and, if desired, of removing some of the oxidation to produce an effect of highlights and relatively darker portions, sometimes called "antiquing".

3,767,476

METHOD AND COMPOSITION FOR PHOSPHATIZING STEEL UNDER PRESSURE

Linden H. Wagner, Davenport, Iowa, and Paul G. Chamberlain, Sarasota, Fla., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 31, 1971, Ser. No. 176,690

Int. Cl. C23f 7/10

U.S. Cl. 148—6.15 R **9 Claims**

The heat and corrosion resistance of manganese phosphate coatings on ferrous surfaces can be greatly improved by modifying a conventional phosphatizing solution to reduce the ferrous ion content thereof, adding a given quantity thereto of the manganese salt obtained from an acid selected from the group consisting of citric, tartaric, gluconic, and saccharic acids and then carrying out the coating process in a closed chamber under a steam pressure in excess of one pound per square inch.

3,767,477

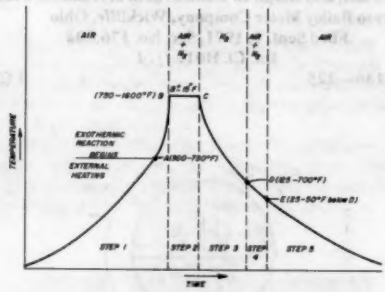
METHOD FOR PRODUCING OXIDE COATED IRON POWDER OF CONTROLLED RESISTANCE FOR ELECTROSTATIC COPYING SYSTEMS

John M. McCabe; John S. Perlowski, and Ronald J. Schur, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,172

Int. Cl. C23c 11/08

U.S. Cl. 148—6.35 **7 Claims**



Oxide coated iron powder required as a carrier in electrostatic copying systems has a uniform oxide film, and has a resistance which can be selectively controlled between 10^2 and 10^{10} ohms, when produced by a five step program of:

Step 1 — fluidizing iron powder in air while heating to a temperature between 500° and 750°F, to initiate an exothermic reaction; and thereafter to a higher peak temperature between 750° and 1600°F, desirably to about 950°F, principally by the heat of exothermically oxidizing iron, which can be supplemented by external heating.

Step 2 — introducing an inert gas such as N_2 into the air and maintaining the temperature of the iron powder essentially constant at its peak temperature.

Step 3 — discontinuing the flow of air but maintaining fluidization by introducing a stream of inert gas such as N_2, Ar or He while reducing the temperature to between 125° and 700°F.

Step 4 — introducing air into the inert gas and cooling the fluidized iron powder to a temperature between 25° and 50°F below that at the end of step 3. The temperature at the beginning of this step determines the resistance of the product, the lower the temperature the lower the resistance, and vice versa.

Step 5 — discontinuing the inert gas but maintaining fluidization in air while cooling the iron powder to a lower temperature suitable for removal.

3,767,478

METHOD FOR PRODUCING PATINA ON A ZINC SURFACE AND ARTICLE SO FORMED

David L. Dollar, Muncie, Ind., and Garland D. Richardson, Lakewood, Colo., assignors to Ball Corporation, Muncie, Ind.

Filed Sept. 14, 1971, Ser. No. 180,527
Int. Cl. C23f 7/12
U.S. Cl. 148—6.15 Z 10 Claims

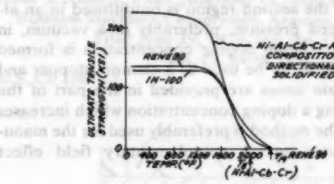
Method for forming a smooth, even, corrosion resistant patina on a zinc surface by abrading or otherwise mechanically graining the surface, and thereafter forming an even zinc phosphate coating thereon, particularly, a zinc phosphate coating in the presence of a nickel ion, which coating is preferably substantially identical in appearance to the natural patina formed by exposure to the atmosphere, and article so formed.

3,767,479

MULTICOMPONENT EUTECTICS FOR HIGH TEMPERATURE APPLICATIONS

Lemuel A. Tarshis, Latham, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 87,907, Nov. 9, 1970, abandoned. This application Feb. 14, 1972, Ser. No. 226,297
Int. Cl. C22c 19/00
U.S. Cl. 148—32 16 Claims



Chromium added to form a multicomponent eutectic in Ni-Cb-Al alloys enhances oxidation resistance and hot corrosion resistance at high temperatures. Alloys of the system Ni-Cb-Al-Cr have excellent mechanical properties in addition to their good oxidation and hot corrosion resistance, particularly when cast and unidirectionally solidified.

3,767,480

TITANIUM BETA S-ALLOY

Mary F. Schuler, Virginia Beach, Va., and Ernest P. Abrahamson, Waltham, Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 27, 1971, Ser. No. 190,455
Int. Cl. C22c 15/00; C22f 1/18
U.S. Cl. 148—32.5 2 Claims

An improved titanium beta alloy and method for the preparation thereof consisting of the following components in the percent by weight indicated: 10.0 – 12.0% molybdenum; 4.0 – 6.0% zirconium; 3.5 – 5.5% tin; 0.4 – 1.5% tantalum; 0.2 – 1.2% columbium, and the remainder titanium.

3,767,481

METHOD FOR EPITAXIALLY GROWING LAYERS OF A SEMICONDUCTOR MATERIAL FROM THE LIQUID PHASE

Michael Ettenberg, Freehold, and Vincent Michael Cannuli, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 7, 1972, Ser. No. 242,051
Int. Cl. H01l 7/38
U.S. Cl. 148—171 1 Claim

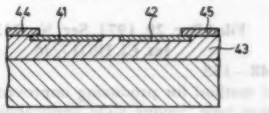
A furnace boat having a plurality of spaced deposition solution containing wells in its upper surface with each well having a recess in its bottom surface. A slide extends through the boat so as to extend across each of the wells and over the recesses in the wells. The slide has a recess in its upper surface and an opening therethrough adjacent to but spaced from the recess. A plurality of epitaxial layers can be deposited on a substrate in succession by placing a separate source body of a semiconductor material in each well recess and a substrate in the slide recess. The deposition solutions are brought into contact with the respective source bodies through the opening in the slide to exactly saturate the deposition solutions with the semiconductor material and the substrate is then brought into contact with the exactly saturated solutions in succession to deposit the epitaxial layers.

3,767,482

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Hendrikus Gerardus Kock; Dirk De Nobel, and Rudolf Paulus Tijburg, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 3, 1971, Ser. No. 177,642
Claims priority, application Netherlands, Sept. 8, 1970, 7013227
Int. Cl. H01l 7/46
U.S. Cl. 148—177 9 Claims



The invention relates to the provision of low-resistance ohmic contacts on $A^{III}B^{V}$ semiconductor bodies. The known alloying contacts provided by means of a doping layer show a poor thermal conductivity, present difficulties in providing current conductors, and can often be used only at low temperatures. According to the invention, the doping layer is removed after alloying and replaced by a contact layer which consists of metals. With such a contact layer, for example, Gunn effect microwave semiconductor devices can by manufactured having a high energy efficiency.

3,767,483

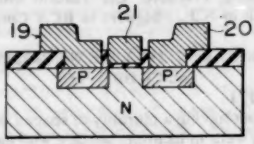
METHOD OF MAKING SEMICONDUCTOR DEVICES

Takashi Tokuyama, Higashikurume; Takaaki Mori, Hachioji; Hirotsugu Kozuka, Tokyo; Takao Miyazaki, Hachioji; Isao Yoshida, Kodaira, and Shigeru Nishimatsu, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 10, 1971, Ser. No. 141,921
Claims priority, application Japan, May 11, 1970, 45/39306; May 22, 1970, 45/43344; Nov. 2, 1970, 45/95911
Int. Cl. H01l 7/50
U.S. Cl. 148—186 21 Claims

The surface of a semiconductor substrate is exposed to an aqueous solution containing an alkali solution immediately be-

fore depositing an insulating film of SiO_2 or the like on that surface, whereby positive charges are induced in the surface



of the semiconductor substrate which is covered with the insulating film.

3,767,484

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

Sadaaki Takagi, and Masamichi Yoshida, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki-shi, Japan

Filed Oct. 6, 1971, Ser. No. 186,970
Claims priority, application Japan, Oct. 9, 1970, 45/88967
Int. Cl. H01l 7/36
U.S. Cl. 148—188 **3 Claims**

A method of manufacturing a semiconductor device which comprises: forming an oxide film containing an impurity on one surface of a semiconductor substrate; forming an oxidation preventing film on the portion of the oxide film above the region of said substrate into which the impurity is to be diffused; and heating the substrate in an oxidizing atmosphere containing steam to diffuse the impurity into only the region.

3,767,485

METHOD FOR PRODUCING IMPROVED PN JUNCTION

Armen N. Sahagun, 16757 Bolera Ln., Huntington Beach, Calif.

Filed Dec. 29, 1971, Ser. No. 213,290
Int. Cl. H01l 7/36
U.S. Cl. 148—188 **1 Claim**

A novel method for producing improved PN junctions of the diffusion type, having wide applicability in the field of semiconductor devices. PN junctions produced by the method of this invention possess superior characteristics, including reduced leakage, higher breakdown voltage and reduced surface inversion effects. The present invention substantially reduces the level of contaminants which, heretofore, were typically trapped in the vicinity of PN diffusion junctions, adversely affecting the quality of the junctions. In this novel method, diffusion of the junction and oxidation of the surface take place concurrently in a single heating step which takes place after the step of cutting or etching mesas in the semiconductor structure.

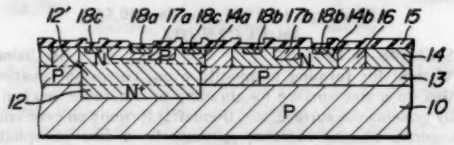
3,767,486

DOUBLE EPITAXIAL METHOD FOR FABRICATING COMPLEMENTARY INTEGRATED CIRCUIT

Ichiro Imaizumi, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 666,344, Sept. 8, 1967, abandoned. This application Mar. 20, 1972, Ser. No. 235,923
Claims priority, application Japan, Sept. 9, 1966, 41/59172
Int. Cl. H01l 7/00, 7/44, 19/00
U.S. Cl. 148—175 **7 Claims**

A process for fabricating integrated circuit devices wherein a P type and N type epitaxial layer are successively formed on a P type semiconductor substrate having a high impurity concentration N type buried region at a predetermined surface portion, P type impurities are selectively diffused thru said N type layer to isolate portions of said N type layer with at least one isolated portion overlying said buried region, wherein during the thermal treatment for said diffusion, N type impurities outdiffusing from said buried region convert the overlying portion of said P type layer to N type. Subsequent selective diffusions are carried out to produce complementary devices.



3,767,487

METHOD OF PRODUCING IGFET DEVICES HAVING OUTDIFFUSED REGIONS AND THE PRODUCT THEREOF

Walter Steinmaier, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 5, 1971, Ser. No. 196,017
Claims priority, application Netherlands, Nov. 21, 1970, 7017066
Int. Cl. H01l 7/44, 11/00
U.S. Cl. 148—191 **17 Claims**

A method of manufacturing a semiconductor device having an insulated gate field effect transistor in which a second region of the second conductivity type is indiffused in a first region of the first conductivity type and source and drain zones of the first conductivity type are provided in said second region. According to the invention, after the indiffusion, the doping material of the second region is outdiffused in an atmosphere of reduced pressure, preferably in a vacuum, in which a zone of maximum doping concentration is formed which may advantageously be used as a channel stopper and the source and drain zones are provided in the part of the second region having a doping concentration which increases from the surface. The method is preferably used for the manufacture of structures having complementary field effect transistors.

3,767,488

PRESSURE SENSITIVE EXPLOSIVE WITH ORGANOSILANE COATING

William O. Seals, Budd Lake, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 15, 1972, Ser. No. 226,545
Int. Cl. C06b 19/02
U.S. Cl. 149—7 **5 Claims**

A pressure sensitive explosive composition is provided which is rendered insensitive to water or water vapor by means of a coating of an organofunctional silane capable of polymerization on contact with water or water vapor. Additionally, a method is provided of coating such a composition by the use of the above-mentioned silane in a halocarbon solvent having a relatively low vapor pressure at ambient conditions. The composition may be a mixture of an inorganic oxidizer and fuel such as potassium chlorate, red phosphorous and ground glass or a mixture of a primary explosive such as lead azide and a secondary explosive such as RDX, either mixture being coated with a silane such as γ (β aminoethyl) aminopropyl trimethoxy silane applied from a volatile halocarbon liquid such as 1,1,2 trichloro-1,2,2 trifluoro ethane. The silane, after evaporation of the liquid, coats the composition and polymerizes on contact with water or water vapor to form a water impermeable film and this renders the composition insensitive to water deactivation.

3,767,489

NITRASOL PROPELLANT

Joan Reinhart; Warren E. Stump, and Julian S. Davidson, all of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 16, 1958, Ser. No. 761,448
Int. Cl. C06d *5/06*
U.S. Cl. 149—18 **5 Claims**

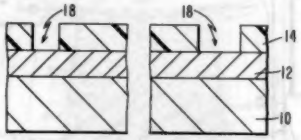
1. A propellant composition consisting essentially of from about 25 to 100 percent binder and up to 75 percent solid loading, said binder comprising from about 10 to 50 percent of plastisol nitrocellulose and from about 15 to 85 percent plasticizer material of the formula $(O_2\ NOCH_2)_3\ C—R$ wherein R is a member of the class consisting of hydrogen, NO_2, lower alkyl and a lower alkyl carbinol radical, said solid loading consisting of up to 60 percent of a metal and from about 20 to 100 percent of a material from the class consisting of perchlorate oxidizing agents, cyclotetramethylene tetranitramine, trinitroethylorthocarbonate and mixtures thereof; said plastisol nitrocellulose being made by placing 90 grams of nitrocellulose (12.6 percent N), 1.2 grams of ethyl centralite and 1.4 liters of nitromethane in a flask and stirring vigorously until dissolution occurs, stirring slowly for an additional 10 minutes to insure homogeniety, adding to the resulting lacquer 19.2 grams of a petroleum sulfonate emulsifying agent for nitrocellulose in about 900 ml of water and circulating through a colloid mill for about 10 minutes, draining the resulting emulsion from the mill into about 30 liters of water and stirring about 15 minutes until a nitrocellulose percipitate is formed which is filtered from the liquid, washed in hexane, dried for about 16 hours and sifted through a 200 mesh screen.

3,767,490

PROCESS FOR ETCHING ORGANIC COATING LAYERS

Gene S. Alberts, Essex Junction, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1971, Ser. No. 157,970
Int. Cl. H05k *3/06*
U.S. Cl. 156—2 **6 Claims**



Polyimide and other relatively inert organic insulating layers may be selectively etched by applying a masking layer to the polyimide in a desired pattern, then contacting the unmasked portions of the polyimide with ozone at an elevated temperature. When the polyimide overlies aluminum films, such as in the passivation of integrated circuits, the ozone etches the polyimide down to the aluminum film, but does not attack the aluminum. If a photoresist is utilized as the masking layer, the ozone removes the photoresist at the same time it etches the unmasked portions of the polyimide.

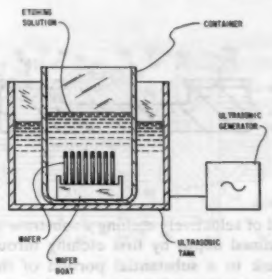
3,767,491

PROCESS FOR ETCHING METALS EMPLOYING ULTRASONIC VIBRATION

Euiwon Chough, Beacon, N.Y., assignor to Cogar Corporation, Wappingers Falls, N.Y.

Filed Oct. 27, 1970, Ser. No. 84,322
Int. Cl. B29c *17/08*
U.S. Cl. 156—5 **3 Claims**

This disclosure is directed to a metal etching solution and process for etching very fine metal lines or a metal conductive pattern used, for example, in the semiconductor industry where an integrated circuit conductive metal pattern is formed on an insulating semiconductor substrate surface to provide interconnection between the devices in the semiconductor substrate as per a desired circuit configuration. The



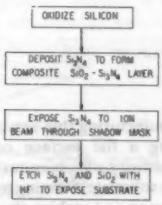
process uses ultrasonic etching with the addition of either a mono or polyhydric alcohol to the metal etching acid solution. Some examples of the alcohol additives used in the solution are isopropanol, n-propanol, cyclohexanol, benzyl alcohol, glycol, and glycerine.

3,767,492

SEMICONDUCTOR MASKING

Alfred Urquhart MacRae, Berkeley Heights, and Robert Alan Moline, Gillette, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 12, 1971, Ser. No 188,175
Int. Cl. H011 *7/00*
U.S. Cl. 156—11 **5 Claims**


OXIDIZE SILICON
DEPOSIT Si_3N_4 TO FORM COMPOSITE SiO_2 - Si_3N_4 LAYER
EXPOSE Si_3N_4 TO ION BEAM THROUGH SHADOW MASK
ETCH Si_3N_4 AND SiO_2 WITH HF TO EXPOSE SUBSTRATE

The specification describes a masking technique for semiconductor processing in which the usual photolithographic mask is eliminated by the use of an ion beam resist technique. The ion beam exposure is performed through a shadow mask. The mask layer comprises a dual dielectric. Preferential etching of the exposed portions of the top layer is used initially to form the pattern and the patterned top layer is used as a mask for the underlayer. This is advantageous when the preferential etch ratio between the composite materials substantially exceeds the available etch ratio between the beam-exposed material and the unexposed material.

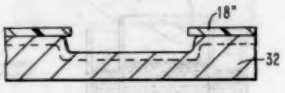
The use of SiO_2-Si_3N_4 and SiO_2-Al_2O_3 composites are suggested. Ion-bombarded Si_3N_4 has been found to be susceptible to etching in HF so that a single etchant can be used for both layers of the SiO_2-Si_3N_4 composite.

3,767,493

TWO-STEP PHOTO-ETCHING METHOD FOR SEMICONDUCTORS

Herbert J. Kump, Essex Junction, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 17, 1971, Ser. No. 154,102
Int. Cl. H01l 7/50
U.S. Cl. 156—17 7 Claims



A method of selectively etching a substrate to form areas of a predetermined depth by first etching through an etch resistance mask to a substantial portion of the depth to be etched, removing the etch resistant mask and, finally, etching the remaining material in the selective areas by exposing the substrate to a second etchant. The method prevents contaminants from the first etchant, the etch mask and the original surface to be etched from contacting the finally etched surface of the second etch step.

3,767,494

METHOD FOR MANUFACTURING A SEMICONDUCTOR PHOTOSENSITIVE DEVICE

Hisashi Muraoka, Yokohama; Taizo Ohashi, Kanagawa-ken; Toshiko Yasui, Kawasaki, and Akihiro Fujii, Kawasaki, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Oct. 12, 1971, Ser. No. 187,946
Claims priority, application Japan, Oct. 15, 1970, 45/90009
Int. Cl. H01l 7/50
U.S. Cl. 156—17 4 Claims

A method for manufacturing thin semiconductor photosensitive devices having a flat surface comprising the steps depositing a high resistivity silicon epitaxial growth layer on a low resistivity silicon substrate, forming a plurality of PN junctions in the growth layer and etching the substrate to remove the central portion thereof so as to expose the corresponding flat surface portion of the growth layer with an etchant of HF, HNO_3 and CH_3COOH which selectively etches the low resistivity silicon without etching the high resistivity silicon.

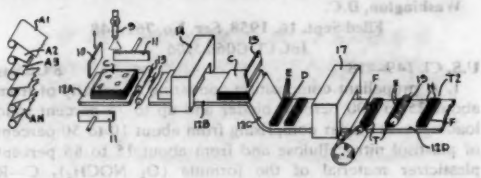
3,767,495

METHOD OF PRODUCING A NON-WOVEN PILE PRODUCT

Paul E. Miller, Norristown, Pa., assignor to Thermo Weave, Inc., Norristown, Pa.

Continuation of Ser. No. 776,622, Nov. 18, 1968, abandoned.
This application July 14, 1971, Ser. No. 162,645
Int. Cl. B29b 3/00
U.S. Cl. 156—72 3 Claims

Frozen stacks, at least mainly consisting of sheet material and which may include leather, plastic, textile fabric, foil and the like in scrap or other irregular sheet form, are sliced to form slabs, at least one face of which is bonded to backing material to form individual tiles for application to walls, floors, ceilings or the like, or to form panel elements of carpets, rugs, mats or similar articles.

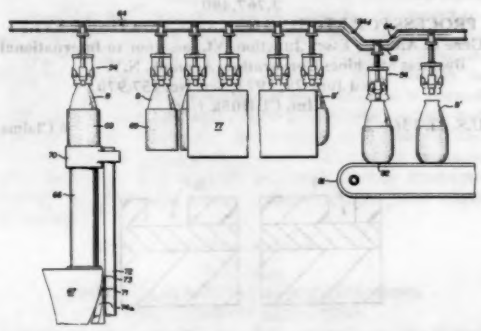


3,767,496

METHOD OF MAKING A PLASTIC-COVERED GLASS CONTAINER

Stephen W. Amberg, St. James; Thomas E. Doherty, Setauket; James A. Karabedian, Garden City, all of N.Y., and Clarence A. Heyne, Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed June 30, 1971, Ser. No. 158,480
Int. Cl. B29c 27/00
U.S. Cl. 156—86 26 Claims



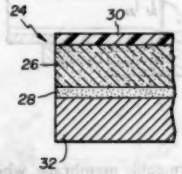
The disclosure relates to a method of making a container comprised of a glass bottle and a plastic covering thereon. The plastic is processed into sheet form and highly oriented for shrink property along one dimension. A minor orientation (one-half or less) is provided in the other dimension. The sheet is pre-printed and formed into strips fed to a mandrel-type machine for making individual, lap-seamed, cylindrical sleeves of the plastic, the major shrink orientation being oriented circumferentially of the sleeve. The sleeves are telescopically located to a predetermined height on a rigid base article a bottle that has been preheated to around 220°F and the sleeve and bottle carried into an oven for shrinking the plastic onto the bottle. Differential surface skin is provided in the plastic, the greater depth skin being placed next to the bottle. Bottle heat is furnished either: (1) by an auxiliary pre-heat oven, or (2) by heat of formation of the container in its manufacture, such as obtained in the annealing lehr. The initial placement of the sleeve allows a bottom end overlap of the sleeve on the bottle and shrinking the plastic results in covering the bottle at least along its body, bottom corner and onto the bottom end at an annular bearing surface thereon.

3,767,497

METHOD OF MANUFACTURING A MAGNETIC RECORDER HEAD

Alfred Sommer, 257 Elm Ave., Teaneck, N.J.

Continuation of Ser. No. 9,795, Feb. 9, 1970, abandoned. This application Dec. 23, 1971, Ser. No. 211,472
Int. Cl. C03c 27/02
U.S. Cl. 156—89 2 Claims



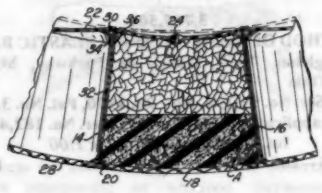
A method of manufacturing a magnetic recorder head in which a glass frit layer is applied and preliminarily bonded to the front surfaces of a pair of ferromagnetic pieces forming the head, after which the pieces are pressed together at a predetermined pressure and at a temperature exceeding the softening temperature of the glass until an effective gap of a desired width is formed. An article manufactured according to this method.

3,767,498

METHOD OF MAKING CAPILLARY INSULATION PANELS

Richard A. Sharp, Lakewood; Jay L. McGrew; John P. Gille, both of Littleton; Eugene C. Mowrey, Denver, and David L. Buskirk, Littleton, all of Colo., assignors to Martin Marietta Corporation, Denver, Md.

Filed Oct. 16, 1970, Ser. No. 81,442
Int. Cl. F17c 1/00
U.S. Cl. 156—94 7 Claims



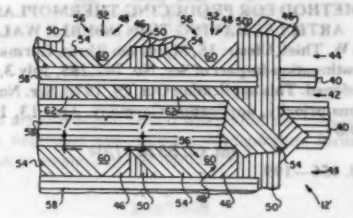
Insulation panels are for use in providing a gas insulation layer between a surface and a liquid having a low boiling temperature. The insulation comprises a cellular or honeycomb core having a plurality of discrete cells enclosed by a capillary cover with capillary openings communicating with each cell. The honeycomb core is tensioned and also is shaped to an arcuate or concave configuration before the capillary cover is adhesively secured thereto. The adhesive forms a smoothly radiused joint between the core walls and the capillary cover with the adhesive being feathered on the cover and the walls immediately adjacent the joint. Vacuum is applied to each cell to form a dimple in the capillary cover and the capillary openings are then formed in the cover. A filler material may be placed in each cell and a backing sheet applied to the core to maintain the filler in the cells and facilitate assembly of the panel to the surface to be insulated. Each cell may be tested individually by applying a vacuum to the capillary opening associated with that cell and, if a leak between the capillary cover and the core is detected, the portion of the cover over that cell may be removed and a predimpled cover patch secured over the cell.

3,767,499

METHOD OF MAKING POROUS LAMINATE

Muriel L. Koss, 10560 Robinson Ave., Arlington, Calif.

Continuation-in-part of Ser. No. 864,126, Oct. 5, 1969, abandoned. This application Sept. 9, 1971, Ser. No. 179,088
Int. Cl. B32b 5/12
U.S. Cl. 156—181 4 Claims



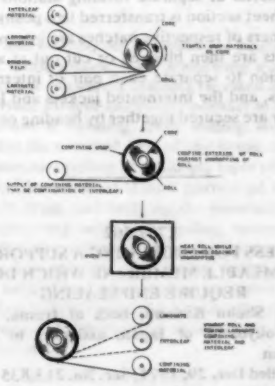
An apertured laminate which may be used as a face sheet of a honeycomb core sound suppression panel for a jet aircraft engine is formed from a plurality in excess of two superposed layers of thin, ribbon-like bands of selected widths, the bands of each layer being parallel and spaced apart by gaps of selected widths. The bands of each layer are disposed at different, selected angles to those in each of the other layers, and the gaps in successive layers are arranged to intersect and register at selected common points to define apertures of selected size, shape and distribution in the resultant laminate.

3,767,500

METHOD OF LAMINATING LONG STRIPS OF VARIOUS MATERIALS

Sidney K. Tally, Nashua, N.H., and Victor F. Dahlgren, Chelmsford, Mass., assignors to TME Corporation, Salem, N.H.

Filed Dec. 28, 1971, Ser. No. 213,099
Int. Cl. B31c 1/00
U.S. Cl. 156—184 10 Claims



Laminates of plastic films to metals or to plastic films or of metals to metals joined together by thermal-activated bonding materials are made by winding long strips of the laminate materials in face-to-face and interleaved relation onto a core to form a roll, confining the outside of the roll to prevent it from unwinding and heating the roll to a temperature sufficient to activate the bonding material. The heating of the roll

results in a differential thermal expansion of the core, the laminate materials and the roll-confining member that generates a bonding pressure. Various interleaf layers wound between layers of the laminate materials can be used to provide desired laminating pressures during the heating step.

3,767,501

METHOD FOR PRODUCING THERMOPLASTIC ARTICLES HAVING THIN DOUBLE WALLS

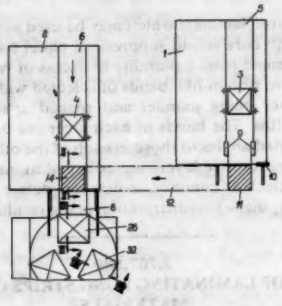
Alfons W. Thiel, Ufestr. 15, Mainz am Rhein, Germany

Continuation-in-part of Ser. No. 742,285, July 3, 1968, abandoned. This application Oct. 19, 1970, Ser. No. 81,953

Claims priority, application Germany, Apr. 13, 1968, P 17 78 270.6

Int. Cl. B32b *31/04*

U.S. Cl. 156—199 **23 Claims**



A method for producing cup-shaped, double-walled thermoplastic articles having two parts, namely a jacket and a liner nested in the jacket to define the inner and outer walls of the article, wherein batches of liners and batches of jackets are concomitantly formed in separate sheet sections of thermoplastic material at separate forming stations and at least one formed sheet section is transferred to a position where the jackets and liners of respective batches are internested, the internested parts are then blanked or cut out at a blanking or punching station to separate each pair of internested jacket and liner units, and the internested jackets and liners of each separated pair are secured together by beading or welding.

3,767,502

PROCESS FOR PRODUCING A SUPPORTED SEMIPERMEABLE MEMBRANE WHICH DOES NOT REQUIRE END SEALING

Kiyoshi Ishii; Shobu Konomi, both of Iruma, and Yoshio Ishiguro, Tokyo, all of Japan, assignors to Daicel Ltd., Osaka, Japan

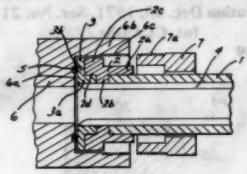
Filed Dec. 29, 1971, Ser. No. 213,835

Claims priority, application Japan, Dec. 30, 1970, 45/122242

Int. Cl. B29c *27/00;* **B01d** *13/00*

U.S. Cl. 156—242 **5 Claims**

A supported semipermeable membrane is prepared by affixing sealing members to the end of a permeable support and then applying a semipermeable membrane forming solution on the support and the sealing members to cover them with a continuous semipermeable membrane, said sealing members being made of a material which can be dissolved by the semipermeable membrane forming solution to form a welded



unity with the semipermeable membrane, whereby the ends of the membrane are sealed without the use of an adhesive.

3,767,503

SEALING METHOD

John Maddalena, Ringoes, N.J., assignor to Cities Service Company, New York, N.Y.

Continuation-in-part of Ser. No. 94,810, Dec. 3, 1970. This application July 23, 1971, Ser. No. 165,582

Int. Cl. B29d *23/04*

U.S. Cl. 156—244 **14 Claims**

Elastomeric sealant compositions are heated and extruded as a tape. The extruded tape is applied hot to a structural joint to be sealed. Application is thus much easier than with a cold tape and bonding to substrates is greatly enhanced. Furthermore, tape which would otherwise be too stiff can be installed in this manner while providing outstanding yield strength and resistance to creep. In preferred embodiments of the invention, the tape is extruded continuously and is simultaneously applied to one or more surfaces being joined. The invention can be used to advantage in the installation of automobile windshields and in the sealing of joints in architectural structures or roadways.

3,767,504

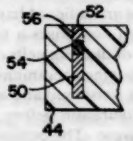
METHOD OF REINFORCING A PLASTIC BAR

Albert Singleton, 7360 Brooks de Parkway, Middleburg Heights, Ohio

Division of Ser. No. 91,394, Nov. 20, 1970, Pat. No. 3,668,103. This application Sept. 21, 1971, Ser. No. 182,486

Int. Cl. B32b *31/00;* **E04c** *1/00*

U.S. Cl. 156—268 **10 Claims**



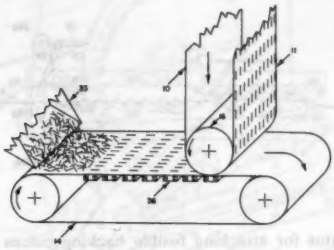
A method of reinforcing a plastic bar member to strengthen it against bending forces comprising the steps of providing a rigid strip of metal reinforcing having a width W and a thickness T; forming a groove in said plastic of a depth greater than W and a width substantially equal to T; positioning said metal reinforcing member in said groove; placing a thin strip of plastic over the exposed position of said metal reinforcing member and applying beads of molten plastic over said strip to bond to said thin strip and each side of the groove by melting and solidifying in sequence.

3,767,505

PRODUCING ORDERED COMPOSITES BY APPLICATION OF MAGNETIC FORCES

Aubert Y. Coran, Akron, and Larry R. Swaney, Wadsworth, both of Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 19, 1971, Ser. No. 117,019
Int. Cl. B32b *31/12*
U.S. Cl. 156—276 11 Claims



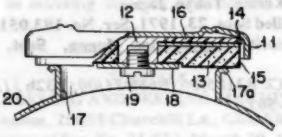
Composites comprising discontinuous elements in ordered disposition in a matrix are prepared by the application of magnetic forces.

3,767,506

METHOD FOR ASSEMBLING TONE HOLE COVERING IN WOOD-WIND MUSICAL INSTRUMENT

Genichi Kawakami, Hamakita, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Continuation of Ser. No. 46,877, June 17, 1970, abandoned. This application Jan. 6, 1972, Ser. No. 215,892
Int. Cl. C09j *5/06*
U.S. Cl. 156—293 14 Claims



A process for assembling a tone hole covering assembly comprises interposing an uncured thermosetting resin between the inner bottom surface of the cup and the pad, and heating and curing the resin while the pad is kept engaged with the tone hole socket of the instrument body in a predetermined airtight condition. The airtightness between the pad and the tone hole socket can be secured without the necessity for repeatedly adjusting the relative position of the pad and the cup.

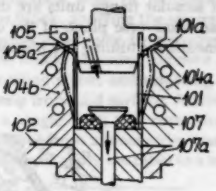
3,767,507

APPARATUS FOR THE MANUFACTURE OF WORK PIECES CONSTRUCTED AS CUP-LIKE, UPWARDLY OR DOWNWARDLY TAPERING CONTAINERS

Hans Stahlecker, Suben, and Oskar Karolyi, Erlengarten, both of Germany, assignors to Firma Michael Horauf Maschinenfabrik, Boll, Germany

Filed Apr. 11, 1969, Ser. No. 816,187
Claims priority, application Germany, Apr. 11, 1968, P 17 78 252.4
Int. Cl. B31b *3/00*
U.S. Cl. 156—382 12 Claims

A method and apparatus for manufacturing work pieces, preferably constructed as cup-like tapering containers, whose walls consist of synthetic resinous material, by utilizing flat blanks that are initially wound into approximately cylindrical tubes and are thereupon closed whereafter the thus-obtained tubes are deformed into tapering configuration forming the walls of for example, cup-like containers.

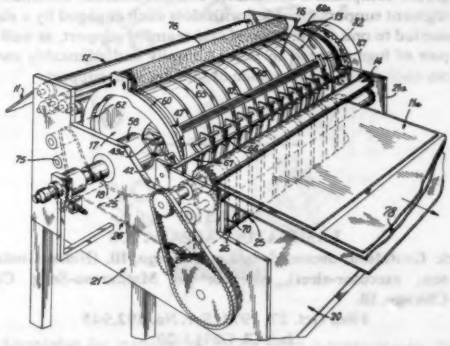


3,767,508

ROTARY HEAT SEALER

Albert W. Hawkins, Princeton; Ronald J. O'Shea, and Herbert M. Case, both of Somerville, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 4, 1971, Ser. No. 186,261
Int. Cl. B32b *31/00;* B30b *15/34*
U.S. Cl. 156—389 9 Claims



Apparatus and method are provided for heat-sealing multiply layers of thermoplastic film comprising a rotating drum having at least one outwardly opening recessed area extending across the surface thereof essentially parallel to the axis about which the drum is rotating; heat sealing means movably mounted within the recessed area of said drum; means for supporting a continuous ribbon of multi-ply layer of heat-sealable thermoplastic film about at least a portion of the peripheral surface of said drum and bridging the recessed area therein; means for traversing said heat sealing means in a radial direction within the recessed area of said drum between a retracted position with the heat sealing means totally within the recessed area of said drum and an extended position with the heat sealing means projecting beyond the surface of said drum; and means for discharging seamwelded film segments from about said drum.

3,767,509

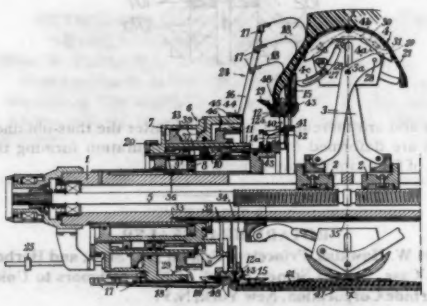
DRUM FOR MAKING RADIAL TIRE CARCASSES

Georges Gazuit, Chenin-Chauveau, Montlucon, France

Filed Aug. 5, 1971, Ser. No. 169,287
Claims priority, application France, Feb. 15, 1971, 7104994
Int. Cl. B29h *17/16, 17/22*
U.S. Cl. 156—415 8 Claims

In this tire making drum comprising a central hollow shaft having slidably mounted thereon a pair of sockets to which

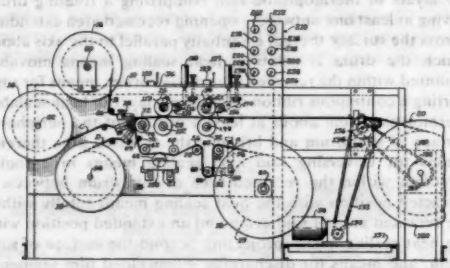
equal crossed arms supporting curved pre-shaping segments covered with elastic lining material are pivoted, and a screw coaxial to said hollow shaft and engaging tapped holes of said sockets, a pair of annular flange units are disposed on either side of the median transverse plane of the drum and carry a bead clamp and means for folding the plies and like tire-making materials about said bead clamp, each curved pre-shaping segment comprises a detachable contour element mounted to a segment support provided with slots each engaged by a slide mounted to one of the arms of said segment support, as well as a pair of lugs adapted to move laterally and adjustably away from each other on either side of said segment support.



3,767,510
LAMINATING APPARATUS

Eric Gustafson, deceased, late of Chicago, Ill. (Helen Gustafson, executor-elect), assignor to Matherson-Selig Co., Chicago, Ill.

Filed Oct. 27, 1971, Ser. No. 192,945
Int. Cl. C09j *5/00*
U.S. Cl. 156—494 **6 Claims**

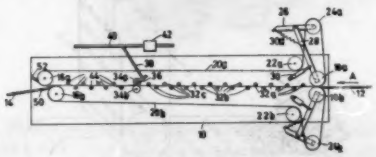


Apparatus for laminating two or more strips of web material which may have different flow characteristics to a web backing element in abutting side by side relation. The laminating apparatus includes a drive system for isolating the laminating section from the takeup station and includes a tensionless web guide which compensates for strips of material which may have been cut unevenly and automatically guides them into a tight abutting relation.

3,767,511
APPARATUS FOR ATTACHING FUSIBLE BACKING PIECES TO TEXTILE PIECES

Kenneth Slade, Charlbury Chorleywood Rd., Rickmansworth, England

Filed Sept. 13, 1971, Ser. No. 179,804
Claims priority, application Great Britain, Sept. 14, 1970, 43,873/70
Int. Cl. B32b *31/08, 31/20*
U.S. Cl. 156—499 **7 Claims**

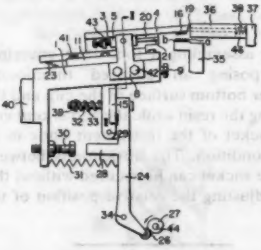


Apparatus for attaching fusible backing pieces to textile pieces comprises two continuous conveyor belts which are brought together at an entrance end of a conveyor, where superimposed textile and backing pieces to be fixed together are fed between the conveyor belts. From the entrance end, the conveyer belts, with the textile and backing pieces therebetween, pass along a common path defined by transverse elements over which the belts are successively deflected and which are heated to bring the belts, and the textile and backing pieces therebetween, to the required fusing temperature, after which the belts with the textile and backing pieces therebetween pass through the nip between two pressure rollers to effect fixing of the backing pieces to the textile pieces.

3,767,512
APPARATUS FOR HEAT SEALING THE OVERLAPPED ENDS OF A THERMOPLASTIC BAND

Okihiko Tsuda, Kawasaki, Japan, assignor to Ikegai Tekko Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 23, 1971, Ser. No. 183,051
Claims priority, application Japan, Sept. 28, 1970, 45/96231
Int. Cl. B31f *5/00*; B65h *21/00*; B32b *31/18*
U.S. Cl. 156—502 **8 Claims**



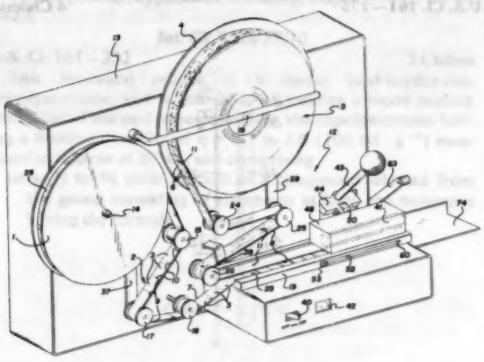
A device for working a heat plate having plural blades disposed in parallel with one another thereon for use in an apparatus for welding a thermoplastic band through melting of the overlapped portions of said band by virtue of the pressing of said blades against it, wherein: a heat plate pivoted by a guide pin on a guide frame in slidable and rotatable fashion and having a stopper is provided in slidable fashion on a slide plate mounted on the guide frame slidably and engaged with an adjusting stopper provided on said guide frame; and a cam mechanism to rotate said heat plate so as to make its tip go down by virtue of the sliding movement of said slide plate after said adjusting stopper has been engaged with said guide pin to thereby stop the heat plate.

3,767,513

FILM STRIP TABBING APPARATUS

Oliver W. Gnage, and Michael A. Petranto, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 24, 1972, Ser. No. 229,068
Int. Cl. B32b *31/04, 31/20*
U.S. Cl. 156—516 6 Claims



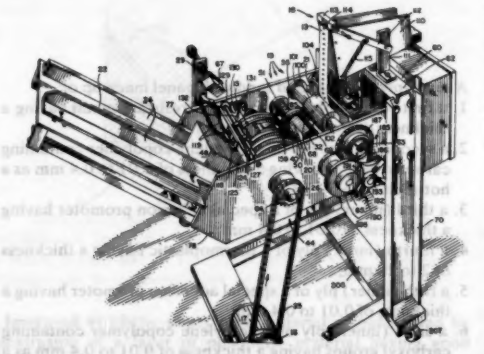
A film strip tabbing apparatus is adapted for use with a photographic film strip having a longitudinally extending series of frame areas and for use with a film tabbing strip having a longitudinally extending series of information areas which can be respectively aligned with such film frame areas. The apparatus includes a film and tabbing strip metering assembly for moving respective film and tabbing strip sections which have the same number of frame and information areas into position for securement together and, once secured together, into position for severance from remaining lengths of the film and tabbing strips. Pin members of the apparatus cooperate with uniformly spaced perforations in the film and tabbing strips for positioning the frame and information areas on the film and tabbing strip sections in respective alignment, preparatory to securing the film and tabbing strip sections together.

3,767,514

LABELING AND FEEDING MACHINE

Frank M. Blossom, 25038 Churchill Ln., Glen Ellyn, Ill.

Continuation of Ser. No. 21,923, March 30, 1970. This application Jan. 25, 1972, Ser. No. 220,617
Int. Cl. B32b *31/00*
U.S. Cl. 156—518 7 Claims



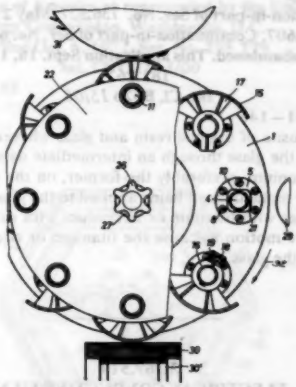
A method for labeling mailing pieces including the steps of severing a label from a label strip by movement of a cutter-transfer-applicator block having a cutter, affixing the severed label to a transfer-applicator surface of the cutter-transfer-applicator block, transferring the label on the transfer-applicator surface to an application zone by movement of the cutter-transfer-applicator block, applying the severed label to a mailing piece in the application zone by movement of the cutter-transfer-applicator block whereby adhesive on the label attaches it to the mailing piece, and releasing the severed portion of the label strip from said surface. A labeling and feeding machine having a single part, the cutter-transfer-applicator block, to sever a label from a label strip, transfer the label to an application zone, and apply the label to a mailing piece.

3,767,515

LABEL EXTRACTOR WITH SWINGING TRANSFER MEMBERS

Erich Eder, Neutraubling, Germany, assignor to Hermann Kronseder, Neutraubling, Germany

Filed Sept. 27, 1971, Ser. No. 183,859
Claims priority, application Germany, Oct. 8, 1970, P 20 49 384.9
Int. Cl. B65c *9/00*
U.S. Cl. 156—568 7 Claims



Apparatus for transferring labels from a magazine to containers and including a transfer drum rotor having a series of peripherally located shafts with label transfer pallets swingable therewith and control mechanism for turning the shafts, the shafts and pallets being pre-assembled in adjustably fixed relation and the shafts having parts which interlockingly key with a complementary keyed part on the drum, whereby one shaft and pallet assembly is removable as a unit from the drum for replacement by a substitute shaft and pallet assembly, the shaft of which has a similarly keyed part which interfits with the complementary keyed part on the drum. Keying of the shaft to the drum is desirably accomplished by a bushing which is adjustably clamped to the control mechanism and which has a socket which constitutes the keyed part of the drum.

3,767,516

LAMINATE OF COTTON PAPER CORE WITH RESIN FLUORESCENT MATERIAL SCRIBED TO EXPOSE CORE

Paul G. Brady, Lacrescent, Minn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 18, 1971, Ser. No. 190,262
Int. Cl. B44f *1/04*
U.S. Cl. 161—2 2 Claims

A fluorescent material is added to the resin which is utilized to coat the core material in an engraving stock. After the surface of the stock is scribed into words or signals and the core material is exposed, the latter will fluoresce when exposed to an external source of light.

3,767,517
LAMINATE OF COTTON PAPER CORE WITH RESIN PHOSPHORESCENT MATERIAL SCRIBED TO EXPOSE CORE

Charles J. Williams, Lacrosse, Wis., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 18, 1971, Ser. No. 190,263
Int. Cl. B44f *1/04*
U.S. Cl. 161—2 **1 Claim**

A phosphorescent material is added to the resin which is utilized to coat the core material in an engraving stock. After the surface material of the engraving stock is scribed into words or signals and the core material is exposed, the latter will phosphoresce in a subnormal amount of light.

3,767,518
ORGANIC RESIN GLASS COMPOSITE AND METHOD FOR MAKING SAME

Duane H. Beninga, Arvada, and Hugh P. Gibbons, Boulder, both of Colo., assignors to Coors Porcelain Company, Golden, Colo.

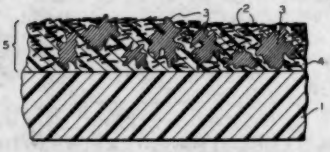
Continuation-in-part of Ser. No. 736,527, May 27, 1968, Pat. No. 3,607,607, Continuation-in-part of Ser. No. 638,879, May 16, 1967, abandoned. This application Sept. 16, 1971, Ser. No. 181,267
Int. Cl. B32b *15/08*
U.S. Cl. 161—146 **6 Claims**

A composite of organic resin and glass wherein the resin is bonded to the glass through an intermediate deposit of titanium or zirconium, preferably the former, on the glass, this intermediate metal deposit being applied to the glass by contacting the glass with titanium or zirconium with sufficient force and relative motion to cause the titanium or zirconium to be bonded to the glass.

3,767,519
ELECTRICAL CONDUCTIVE FILM

Kunio Kojima; Kazuyuki Shimada, and Mitsuo Wada, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 31, 1972, Ser. No. 222,008
Claims priority, application Japan, Feb. 3, 1971, 46/4399; Feb. 9, 1971, 46/5754
Int. Cl. B32b *5/16, 5/14*
U.S. Cl. 161—168 **8 Claims**

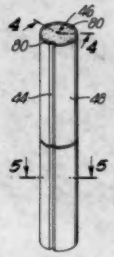


An electrically conductive film for use in printed circuits and the like. The film has a thermosetting binder which contains metal powder in flake form and metal powder in dendrite form dispersed therein. The metal powder in flake form is distributed more densely in the layer at the surface remote from the base on which the film is placed than in the layer at the surface of the film which is against the base.

3,767,520
EXTRUDED FIBROUS LIQUID RESERVOIR AND METHOD OF MAKING SAME

Franklin Dick, 18 Stuyvesant Oval, New York, N.Y., and Peter H. Seckel, 14 Capron Ln., Upper Montclair, N.J.

Continuation of Ser. No. 648,589, June 26, 1967, abandoned. This application Nov. 24, 1971, Ser. No. 202,026
Int. Cl. D02g *3/00;* **B43k** *5/00*
U.S. Cl. 161—175 **4 Claims**

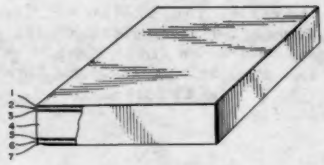


The reservoir comprises a length of raw filamentary tow encased in a plastic sleeve.

3,767,521
MULTI-PLY, METAL-CLAD SANDWICH PANELS

Rudolf Glaser, Ludwigshafen; Alfred Hofmann, Bobenheim-Roxheim, and Klaus Bronstert, Carlsberg, all of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Oct. 7, 1971, Ser. No. 187,336
Claims priority, application Germany, Oct. 7, 1970, P 20 49 226.6
Int. Cl. B32b *15/08, 27/32*
U.S. Cl. 161—216 **6 Claims**



A multi-ply metal-plated sandwich panel made up of:

1. a first (outer) ply of a corrosion-resistant metal having a thickness of from 0.05 to 1 mm;
2. a second (inner) ply of an ethylene copolymer containing carboxyl groups having a thickness of 0.01 to 0.4 mm as a hot-melt adhesive;
3. a third (inner) ply of a special adhesion promoter having a thickness of 0.01 to 0.4 mm;
4. a fourth (inner) ply of a thermoplastic having a thickness of 2 to 20 mm;
5. a fifth (inner) ply of a special adhesion promoter having a thickness of 0.01 to 0.4 mm;
6. a sixth (inner) ply of an ethylene copolymer containing carboxyl groups having a thickness of 0.01 to 0.4 mm as a hot-melt adhesive; and
7. a seventh (outer) ply of a corrosion-resistant metal having a thickness of 0.05 to 1 mm.

3,767,522

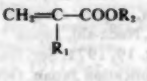
LINEAR HEAT-HARDENABLE COPOLYMERIZATE

Jurgen Foch, Essen-Bredeney, and Ulrich Holtschmidt, Essen, both of Germany, assignors to Th. Goldschmidt AG, Essen, Germany

Division of Ser. No. 31,748, April 24, 1970, Pat. No. 3,694,418. This application Oct. 18, 1971, Ser. No. 190,398
Claims priority, application Germany, May 6, 1969, P 19 22 942.6
Int. Cl. B32b 27/10
U.S. Cl. 161—232 2 Claims

This invention relates to a linear heat-hardenable copolymerizate, and to a method of treating a wood surface with a foil of the said copolymerizate, the copolymerizate having a limiting viscosity of $\eta = 0.7$ to 3.0 (100 ml · g $^{-1}$) measured in toluene at 20° C., and comprising

seventy to 94 mole percent of a compound selected from the group consisting of styrene or at least one monomer having the formula



in which R_1 is selected from the group consisting of hydrogen and a methyl group, and R_2 is an alkyl group having 1 to 4 carbon atoms,

two to 15 mole percent of at least one compound selected from the group consisting of maleic anhydride and itaconic acid anhydride, and

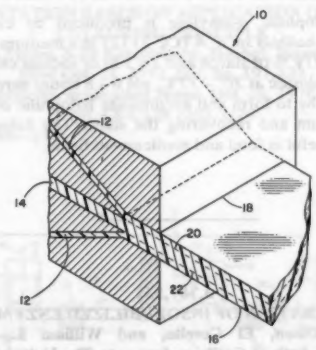
four to 15 mole percent of at least one compound selected from the group consisting of acrylic acid glycidyl ester and methacrylic acid glycidyl ester.

3,767,523

SYNTHETIC PAPER BASE AND METHOD OF MANUFACTURE

Eckhard C. A. Schwarz, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 12, 1971, Ser. No. 133,132
Int. Cl. B32b 27/08
U.S. Cl. 161—254 5 Claims



Improved synthetic paper base material manufactured by coextrusion of a layer of polymeric material having good physical properties with one or more layers of a different polymeric material having good printability. Adhesion between the layers is increased by including in each a minor amount of an ethylene-vinyl acetate copolymer.

3,767,524

COMPOSITION FOR RECLAIMING PULP FROM WASTE PAPERS

C. Roy Gleason, Chicago, Ill., assignor to World-Wide Paper Reclamation, Inc., Chicago, Ill.

Division of Ser. No. 33,988, May 1, 1970, Pat. No. 3,620,909. This application June 10, 1971, Ser. No. 151,916The portion of the term of this patent subsequent to Nov. 16, 1988, has been disclaimed.
Int. Cl. D21b 1/08
U.S. Cl. 162—8 6 Claims

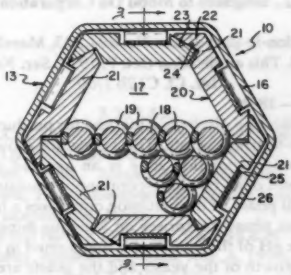
The reclamation of purified and reusable pulps from various types of waste papers by first shredding the paper into fine pieces, boiling the shredded paper in a chemical solution containing sodium hydroxide, sodium carbonate, sodium or ammonium phosphate and sodium borate, water washing the chemicals from the cooked paper and then bleaching the pulp with a chemical bleach at elevated temperature.

3,767,525

IRRADIATION SUBASSEMBLY

Orville S. Seim, Wheaton; Erwin C. Filewicz, Calumet City, and Ernest Hutter, Wilmette, all of Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 6, 1972, Ser. No. 295,779
Int. Cl. G21c 3/00
U.S. Cl. 176—15 4 Claims



An irradiation subassembly for use in a nuclear reactor includes a bundle of slender elongated irradiation capsules or fuel elements enclosed by a coolant tube and having a yieldable retaining liner between the irradiation capsules and the coolant tube. For a hexagonal bundle surrounded by a hexagonal tube the yieldable retaining liner may consist either of six segments corresponding to the six sides of the tube or three angular segments each corresponding to two adjacent sides of the tube. The sides of adjacent segments abut and are so cut that metal-to-metal contact is retained when the volume enclosed by the retaining liner is varied and springs are provided for urging the segments toward the center of the tube to hold the capsules in a closely packed configuration.

3,767,526

METHOD FOR INCREASING YIELD OF SUCROSE

Hideo Suzuki; Harumi Yoshida; Yoshiko Ozawa; Akira Kamibayashi, all of Chiba; Munetaka Sato, Tokyo; Atsushi Mori, and Makoto Endo, both of Hokkaido, all of Japan, assignors to Agency of Industrial Science & Technology and Hokkaido Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1971, Ser. No. 205,296
Int. Cl. C12b 1/00; C13j 1/02, 1/06
U.S. Cl. 195—11 6 Claims

In a method for producing sucrose from beets through a deionization treatment using ion-exchange resins, increasing

the yield of sucrose by recovering sucrose from the molasses which is separated from sucrose when the massecuite resulting from the sugar-boiling process is subjected to centrifugal separation. Sucrose is recovered from the molasses by (i) allowing α-galactosidase to act upon the separated molasses thereby hydrolyzing the raffinose contained therein into sucrose and galactose and returning the resultant hydrolyzate to the purification process which includes the treatment of deionizing fresh diffusion juice with an ion-exchange resin, (ii) hydrolyzing the separated molasses into sucrose and raffinose with α-galactosidase, deionizing the resultant hydrolyzate with an ion-exchange resins, and thereafter returning the deionized hydrolyzate to the purification process in which fresh diffusion juice is treated, or (iii) deionizing the separated molasses with an ion-exchange resins, subsequently hydrolyzing the raffinose contained therein into sucrose and galactose with α-galactosidase, and thereafter returning the resulting hydrolyzate to the purification process in which fresh diffusion juice is treated; whereby the hydrolyzate is treated in the sugar-boiling process to effect recovery of sucrose contained therein. The molasses further separated centrifugally is treated again with α-galactosidase and returned to the purification process in which fresh diffusion juice is treated.

3,767,527

METHOD FOR PRODUCING HYDROCARBON-UTILIZING YEASTS

Vernon F. Coty, Trenton, and Richard I. Leavitt, Pennington, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 804,303, March 4, 1969, abandoned. This application Oct. 7, 1971, Ser. No. 187,495

Int. Cl. C12b *1/00*

U.S. Cl. 195—28 R **5 Claims**

This specification discloses a method for producing aerobic, hydrocarbon-utilizing yeasts. The yeasts are grown in an oxygen-containing incubation zone in an agitated culture mixture in the form of an oil phase-continuous emulsion of oil and water. The oil phase of the emulsion comprises a hydrocarbon and the water phase comprises an aqueous mineral nutrient solution. The pH of the emulsion is maintained in the range of 2–4 during growth of the yeasts and the yeasts are grown to a desired extent but not to a point where the emulsion inverts into a water phase-continuous emulsion. The pH of the emulsion is then raised at least one-half pH unit into the range of above 4 but not above 5, thereby separating the emulsion into an oil phase and a water phase, the water phase containing the yeast cells. The yeast cells are then recovered from the water phase.

3,767,528

PROCESS FOR THE MANUFACTURE OF 3,4-DISUBSTITUTED PHENYL-L-ALANINES

Tomohisa Nagasaki; Masanori Sugita, both of Kawagoe; Kunio Nakagawa, and Hiroyasu Koyama, both of Tokyo, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed Sept. 27, 1971, Ser. No. 184,208

Claims priority, application Japan, Sept. 30, 1970, 45/85092

Int. Cl. C12d *13/06*

U.S. Cl. 195—30 **13 Claims**

3, 4-Disubstituted phenyl-L-alanines (including "L-dopa") prepared by transamination of corresponding 3, 4-disubstituted phenyl pyruvic acid and an amino radical donor. Selected bacteria, moulds and yeasts provide the transaminase.

3,767,529

METHOD OF PRODUCING L-ISOLEUCINE BY FERMENTATION

Fumihiro Yoshinaga; Koji Kubota; Itsuo Jujita, all of Kanagawa, and Shinji Okumura, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 110,632, Jan. 28, 1971, abandoned. This application Nov. 10, 1971, Ser. No. 197,483

Claims priority, application Japan, Feb. 16, 1970, 45/13210

Int. Cl. C12d *13/06*

U.S. Cl. 195—30 **5 Claims**

Certain microorganisms of genus Brevibacterium, Corynebacterium and Arthrobacter produce L-isoleucine directly from glucose or acetic acid in the culture medium.

3,767,530

PROCESS FOR PRODUCING HALOPHILIC ALPHA-AMYLASE

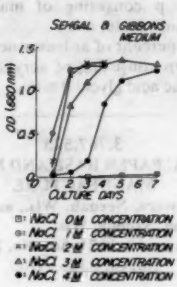
Hiroshi Onishi, Noda, Japan, assignor to Noda Institute for Scientific Research, Noda-shi, Japan

Filed Oct. 19, 1971, Ser. No. 190,561

Claims priority, application Japan, Oct. 20, 1970, 45/91675

Int. Cl. C12d *13/10*

U.S. Cl. 195—62 **5 Claims**



Novel halophilic α-amylase is produced by cultivating *Micrococcus halibius sp. n.* ATCC 21727 in a medium containing 0.2 – 2 W/V % of starch and 1 – 3 M of sodium chloride or potassium chloride at 30° – 37°C, pH 6 – 8 under aerobic conditions thereby to form and accumulate halophilic α-amylase in the medium and recovering the same. The halophilic α-amylase is useful in food and medicament fields.

3,767,531

PREPARATION OF INSOLUBILIZED ENZYMES

Alfred C. Olson, El Cerrito, and William L. Stanley, Richmond, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Feb. 14, 1972, Ser. No. 226,283

Int. Cl. C07g *7/02*

U.S. Cl. 195—63 **7 Claims**

Insolubilized but active enzymes are prepared by reacting an enzyme with a phenol-formaldehyde resin and glutaraldehyde.

3,767,532

METHOD OF PRODUCING PROTEASE BY MICROORGANISM

Yoshiteru Hirose; Sadanobu Tobe; Masami Hoshino; Kohei Hashimoto, and Koji Mitsugi, all of Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Dec. 22, 1970, Ser. No. 100,818
Claims priority, application Japan, Dec. 29, 1969, 45/1555
Int. Cl. C12d *13/10*
U.S. Cl. 195—65 7 Claims

Protease production by Bacillus subtilis and Rhodotolura glutinis by otherwise conventional culturing methods increased if the culture medium contains at least 0.02% of phytic acid or its salts.

3,767,533

PROCESS FOR PRODUCING URICASE

Zenjiro Sugisaki; Norihiko Watanabe; Hirokazu Koyama, all of Noda; Tuneo Kobayashi, Nagareyama, and Nobuyoshi Iguchi, Noda, all of Japan, assignors to Noda Institute for Scientific Research, Noda-shi, Japan

Filed Dec. 23, 1971, Ser. No. 211,711
Claims priority, application Japan, Dec. 26, 1970, 45/118750; Dec. 28, 1970, 45/119989
Int. Cl. C12d *13/10*
U.S. Cl. 195—66 R 7 Claims

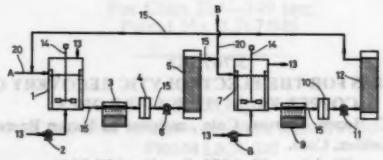
Uricase is produced by incubating Corynebacterium uratoxidans nov.sp. U-23 (ATCC No. 21749), U-8 (ATCC No. 21750), U-30 (ATCC No. 21751) or U-125 (ATCC No. 21752) in a medium containing 0.01 to 1.0% (W/V) of uric acid and preferably 0.1 to 3.0% (V/V) of at least one of alcohols having 1 to 8 carbons at a pH of 5.5 to 9.0 and a temperature of 20° to 40°C under aerobic conditions, thereby producing and accumulating the extracellular uricase in the surrounding medium and recovering the same from the cultured broth. The uricase is useful as a reagent for biochemical diagnosis.

3,767,534

RECYCLE TYPE, CONTINUOUS PROCESS FOR FERMENTATION BASED ON APPLICATION OF MIXED CULTURING PRINCIPLE

Yoshiharu Miura, 8-28 Katagiri-cho, Ibaragi, Japan

Filed Oct. 21, 1971, Ser. No. 191,432
Claims priority, application Japan, Oct. 26, 1970, 45/94209
Int. Cl. C12b *1/00, 1/20*
U.S. Cl. 195—115 11 Claims



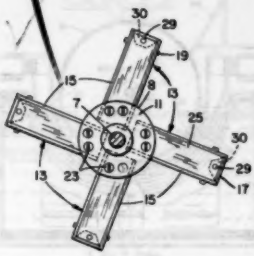
A continuous process for fermentation of mixed cultures of microorganisms includes inoculating at least two fermentation tanks with different types of microorganisms and recycling the culture liquors between the tanks. Fermentation products are recovered at intermediate stations in the recycling system.

3,767,535

METHOD OF REACTING AN INSOLUBILIZED ENZYME IN A FLUID MEDIUM

Noshir B. Havewala, Corning, and Howard H. Weetall, Elmira, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed June 14, 1971, Ser. No. 152,507
Int. Cl. C12b *1/00*
U.S. Cl. 195—116 2 Claims



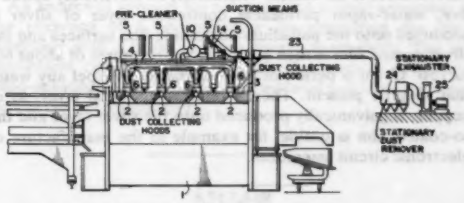
Facilitating action of a particulate catalyst such as an insolubilized enzyme in a fluid medium by conducting the catalytic action while the particulate catalyst is in foraminous containers attached to a rotatable and/or reciprocatable stirrer shaft.

3,767,536

DUST COLLECTING SYSTEM IN A COAL CHARGING OPERATION FOR COKE OVENS

Minoru Ikeda, and Masatsume Sugimoto, both of Wakayamashi, Japan, assignors to Sumikin Coke Company Limited, Wakayamashi, Japan

Filed Nov. 4, 1971, Ser. No. 195,629
Claims priority, application Japan, Nov. 4, 1970, 45/109420
Int. Cl. C10b *27/04*
U.S. Cl. 202—263 5 Claims



This invention is a dust collecting system for gases containing dust produced in the case of charging coke ovens with coal wherein a plurality of divided sub-ducts are arranged on coke ovens and a main duct connected with them is connected with a dust removing apparatus so that a discharged gas having passed through a dust collecting and removing apparatus for gases containing dust as provided in a coal charging car may be completely introduced into the duct, may have dust well removed with the dust removing apparatus connected with the main duct and may be discharged into the atmosphere as a very clean gas.

3,767,537

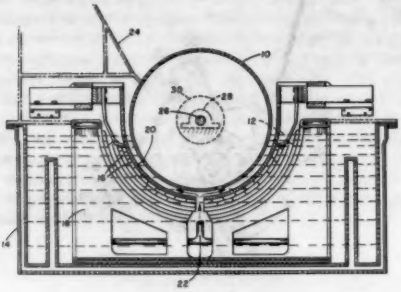
METHOD AND APPARATUS FOR CONTINUOUS PRODUCTION OF NICKEL FOIL

Milton L. Selker, Shaker Heights, Ohio, assignor to Gould, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 836,822, June 26, 1969, abandoned. This application Nov. 8, 1971, Ser. No. 196,332

Int. Cl. C23b 7/02; B01k 1/00; B23n 1/00

U.S. Cl. 204—13 4 Claims



A method and apparatus for continuously producing pure, solid, and pore-free nickel foil by electrodeposition, utilizing a cathode drum of titanium.

3,767,538

METHOD OF COATING PLASTIC FILMS WITH METAL

Alfred Politycki, Ottobrunn, and Wolfgang Stoeger, Planegg, both of Germany, assignors to Seimens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jan. 6, 1972, Ser. No. 215,932

Claims priority, application Germany, Jan. 11, 1971, P 21 01 049.1; Jan. 28, 1971, P 21 04 058.4

Int. Cl. C23c 3/00; C23f 17/00

U.S. Cl. 204—30 8 Claims

A method of coating a polyester or polyimide film with a metal whereby the film surfaces to be coated are at first cleansed, degreased and roughened, as by the use of chemical agents and are then heated at temperatures of about 60° to 150° C. for a period of time sufficient to expel any water that may be present. The film is then dipped into a solution containing palladium ions so that seed crystals thereof form on the film surfaces to be coated. Thereafter, an electrically conductive, water-vapor permeable continuous layer of silver is produced onto the palladium-containing film surfaces and the silver-coated film is then heated at temperatures of about 60° to 150° C. for a period of time sufficient to expel any water that may be present. Then a reinforcing metal layer, as of copper, is galvanically produced onto the silver layer and the so-coated film is usable, for example in the manufacture of electronic circuit assemblies.

3,767,539

ACID GALVANIC COPPER BATH

Wolfgang Clauss, and Hans-Gunther Todt, both of Berlin, Germany, assignors to Schering AG, Berlin and Bergkamen, Germany

Filed Oct. 4, 1971, Ser. No. 186,548

Claims priority, application Germany, Oct. 29, 1970, P 20 53 860.7

Int. Cl. C23b 5/20

U.S. Cl. 204—52 R 5 Claims

Acid aqueous electrolytes for the deposition of bright, low-tension, ductile copper coatings containing organo selenium compounds are used.

3,767,540

ADDITIVE FOR ELECTRODEPOSITION OF BRIGHT ZINC FROM AQUEOUS, ACID, ELECTROPLATING BATHS

William E. Rosenberg, Parma, Ohio, assignor to R. O. Hull & Company, Inc., Cleveland, Ohio

Division of Ser. No. 229,590, Feb. 25, 1972, Pat. No. 3,723,263. This application Oct. 12, 1972, Ser. No. 296,826

Int. Cl. C23b 5/46

U.S. Cl. 204—55 R 1 Claim

It has been found that upon addition to an aqueous, acid, zinc electroplating bath, naphthol polyoxyalkylate and polyethylenimine act synergistically to provide smooth, bright, ductile, electrodeposits of zinc.

3,767,541

ANODIZED FILM FOR ELECTROLYTIC CAPACITOR AND METHOD FOR PREPARATION THEREOF

James H. Curtis, Cayce, S.C., assignor to General Electric Company, Owensboro, Ky.

Filed June 29, 1971, Ser. No. 157,993

Int. Cl. C23b 9/02, 11/02; H01g 9/02

U.S. Cl. 204—56 R 3 Claims

An anodized film is formed by oxidizing a metal selected from the group consisting of aluminum, niobium, tantalum, and titanium by forming the metal in a formation bath which consists essentially of ammonium hydroxide, sodium hydroxide, or potassium hydroxide; a polycarboxylic acid having from two to 10 carbon atoms; and an aqueous solvent. In the preferred embodiment, deionized water is used as the solvent. The formation electrolyte yields an oxide film or film-forming metals having enhanced capacitance or volt-microfarad product as compared to films formed using prior art formation electrolytes.

3,767,542

REDUCTION OF ELECTROLYTIC CELL VOLTAGE BY ANODE VIBRATION

Richard C. Carlson, Euclid, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Oct. 4, 1971, Ser. No. 186,082

Int. Cl. C01b 7/06

U.S. Cl. 204—98 2 Claims

The operating voltage of an electrolytic cell in which gaseous evolution occurs at the anode is reduced by applying high speed mechanical vibration to the anode.

3,767,543

PROCESS FOR THE ELECTROLYTIC RECOVERY OF COPPER FROM ITS SULFIDE ORES

Wayne C. Hazen, Denver, Colo., assignor to Hazen Research, Inc., Golden, Colo.

Filed June 28, 1971, Ser. No. 157,281

Int. Cl. C22d 1/16; C23b 5/20

U.S. Cl. 204—107 7 Claims

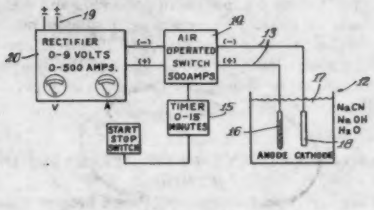
An improvement in the ferric chloride leach recovery of copper from its sulfide ores which comprises recovery of the copper from the leach solution after removal of sulfur by electrolysis rather than by conventional cementation with added iron.

3,767,544

SURFACE TREATMENT OF HIGH SPEED STEEL METAL CUTTING TOOLS AND THE PRODUCT THEREOF

Thomas A. Novosel, East Burke, and Donald O. Erskine, Lyndon Center, both of Vt., assignors to Vermont American Corporation, Louisville, Ky.

Filed Sept. 2, 1971, Ser. No. 177,338
Int. Cl. C23b 3/02, 1/04
U.S. Cl. 204—141.5 5 Claims



The subject invention provides a method of treating the working surfaces of high speed steel metal cutting tools to reduce the friction between the surface of the cutting tool and the workpiece and/or the chip and the novel tool produced thereby. The method involves a transformation of the working surface on the steel tool which transformation involves the removal of the multitude of tiny carbide particles that appear in random positions on the working surface. This modified surface layer from which the carbide particles are removed leaves a honeycomb like hole structure where they were, extends to a depth equal to about the average size of carbide particles, at most in the low hundred thousandths of an inch. The removal of this surface layer of carbide particles appears to reduce friction between the active tool surfaces and the workpiece and/or chip is substantially reduced, with consequent reduction in buildup of material on the edge of the tool and reduction of friction of the tool with the chip and/or the workpiece.

The process of the invention is advantageous in the surface treatment of high speed steel cutting tools such as twist drills and the like. It is particularly advantageous for the treatment of drills employed to drill holes into soft, gummy metals like aluminum, copper, titanium, and some stainless steels and the like, but is not limited thereto.

The high speed steels employed for making the metal-cutting tools herein disclosed comprise a major proportion of iron, containing carbon, and alloying metals known as "carbide formers" including molybdenum, tungsten, chromium and vanadium. Cobalt may also be present. These alloying elements are suitably proportioned to provide the particular properties desired for a specific tool as is well understood in the art.

ERRATUM

For Class 204—149 see:
Patent No. 3,767,046

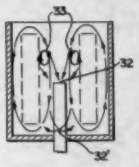
3,767,545

PROCESS AND APPARATUS FOR REMOVING IONS FROM LIQUIDS

Ronald Ray Lucero, Anaheim, Calif., assignor to Interface Development Co., Inc., Columbia, S.C.

Continuation-in-part of Ser. No. 760,620, Sept. 18, 1968, abandoned. This application June 7, 1971, Ser. No. 150,599
Int. Cl. B01k 1/00; C10g 33/02
U.S. Cl. 204—155 20 Claims

A fluid, including a gas or a liquid, is flowed through a cylindrical enclosure and subjected to ultraviolet radiation to make predetermined ions more susceptible to a magnetic field established within the fluid by a magnet positioned around or within the enclosure. The ions are moved in a vortex motion



within the magnetic field so that like ions converge at a focal point from which fluid containing a higher concentration of these ions is removed.

3,767,546

PRODUCTION OF 16-DEHYDROPREGNENOLONE AND RELATED COMPOUNDS

Joel E. Huber, and John M. Beaton, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 4, 1971, Ser. No. 195,821
Int. Cl. C07b 29/06; C07c 173/00
U.S. Cl. 204—158 R 2 Claims

16-Dehydropregnenolone or 16-dehydroprogesterone is produced by cleavage of the $\Delta^{20(22)}$ double bond in pseudodiosgenin diacetate or pseudodiosgenone acetate by means of photo-oxidation with singlet oxygen in the presence of hematoporphyrin dye.

3,767,547

PHOTOPOLYMERIZATION USING TRIORGANO-SUBSTITUTED PHOSPHINE AND SULFONYL HALIDES AS A PHOTOINITIATOR

Heino Puhk, Olmsted, Ohio, assignor to SCM Corporation, Cleveland, Ohio

Filed Oct. 21, 1971, Ser. No. 191,351
Int. Cl. C08f 1/20, 3/64, 3/66
U.S. Cl. 204—159.23 7 Claims

An improved process for polymerizing a vinyl monomer in the presence of a photoinitiator by irradiating the vinyl monomer with a beam of wave energy is set forth. The improvement comprises using an effective amount of a triorgano-substituted phosphine and a sulfonyl halide in combination as the photosensitizer.

3,767,548

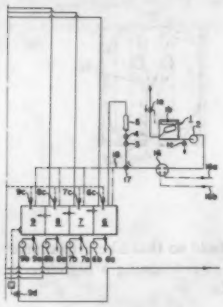
METHOD AND APPARATUS FOR CONTINUOUS DEMINERALIZATION IN FOOD PROCESSING PLANTS

Katsuto Okada; Mamoru Tomita; Minobu Ono; Katsuharu Yamazaki, and Juichi Ohkuma, all of Tokyo, Japan, assignors to Morinaga Nyugyo Kabushiki Kaisha, Tokyo, Japan

Filed July 15, 1971, Ser. No. 162,776
Claims priority, application Japan, Aug. 1, 1970, 45/67632
Int. Cl. B01d 13/02
U.S. Cl. 204—180 P 6 Claims

A method and apparatus adapted for automatically controlled operation in powdered milk plants and other food processing plants. The method and apparatus are particularly

suited for demineralizing milk and other liquids which are likely to degenerate by temperature conditions and the like



during demineralization through a continuous processing that involves no degeneration of the product obtained and is well suited for automatic controlling.

3,767,549

METHOD FOR PRODUCING BASIC ALUMINUM CHLORIDE

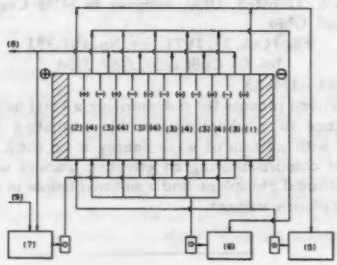
Kyoichi Sasaki; Susumu Isohata, both of Tokyo; Masaaki Kato, Nobeoka, and Masahiko Murakoshi, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sept. 22, 1971, Ser. No. 182,585

Claims priority, application Japan, Sept. 24, 1970, 45/82980

Int. Cl. B01d *13/02*

U.S. Cl. 204—180 P **8 Claims**



Basic aluminum chloride can be produced by allowing an aqueous solution of basic aluminum chloride or of aluminum chloride to exist in compartments bounded on anode side by anion-exchange membrane and on cathode side by cation-exchange membrane in an electrolytic cell in which anion-exchange membrane and cation-exchange membrane are alternately disposed and allowing an aqueous solution of an electrolyte to exist in compartments adjacent to the said compartments and applying current through the electrodes to increase the basicity of the aqueous solution of basic aluminum chloride or of aluminum chloride. Such method does not require many electrodes, does not require high power and causes no generation of chlorine.

3,767,550

METHOD FOR IMPROVING THE SHELF LIFE OF POLYAMIDE ACID DISPERSIONS FOR ELECTRODEPOSITION

Edith M. Boldebuck, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,520

Int. Cl. B01k *5/02*

U.S. Cl. 204—181 **4 Claims**

A method is provided for improving the shelf life of polyamide acid dispersions which are useful as electrocoating compositions for making composites of polyimide and metal substrates, such as insulated conductors, insulated metal substrates useful for making capacitors, etc. Improved results are achieved by maintaining the temperature of the dispersion of polyamide acid below about 15° C during the shelf period.

3,767,551

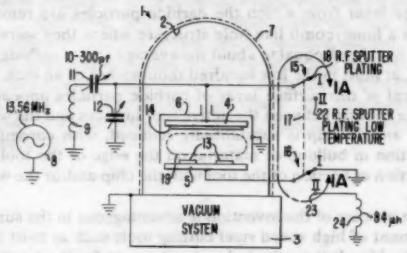
RADIO FREQUENCY SPUTTER APPARATUS AND METHOD

Albert Lang, Jr., and Lawrence F. Herte, both of Palo Alto, Calif., assignors to Varian Associates, Palo Alto, Calif.

Continuation of Ser. No. 832,246, June 11, 1969, abandoned. This application Nov. 1, 1971, Ser. No. 194,603

Int. Cl. C23c *15/00*

U.S. Cl. 204—192 **6 Claims**



A radio frequency sputter apparatus is disclosed. The apparatus includes first and second spaced electrode structures with a grounded shield structure disposed around the outside of one of the electrode structures to define a sputter cathode or target electrode. Radio frequency energy is applied to the space between the electrode structures to produce a radio frequency plasma discharge in the region between the electrode structures. A radio frequency inductor is placed in a direct current circuit connection between the non-target electrode (substrate table) and ground potential. The target electrode is permitted to self bias to a negative d.c. potential. Heating of the non-target electrode and objects being plated supported therefrom is substantially reduced due to the provision of the inductor. A switch is provided for selectively connecting the non-target electrode directly to ground with or without the inductor in the connection to ground.

3,767,552

GAS ANALYZER

Jay M. Lauer, Hacienda Heights, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

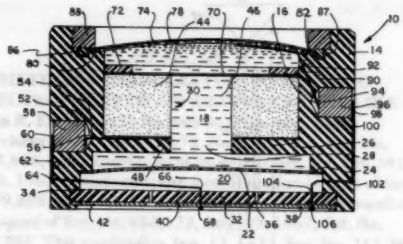
Filed Oct. 6, 1971, Ser. No. 187,051

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 P **14 Claims**

An electrochemical gas analyzer is disclosed. The analyzer comprises an insulator body having a central passage divided into an electrochemical cell chamber and a gas expansion chamber by a first flexible, liquid impermeable expansion

membrane. An anode in the form of a high surface area, liquid-pervious body of a nonpolarizable metal is received in the cell chamber. The upper surface of the cell chamber is enclosed by a thin, perforated, convex cathode of a polarizable metal that is non-flexible under the conditions of operation of



the analyzer. The cathode is covered with a gas-permeable, electrolyte-impermeable membrane which conforms to the surface of the cathode and exhibits less tendency to flex than the first flexible membrane. Sufficient liquid electrolyte is present between the membranes to fill the entire cell chamber.

3,767,553

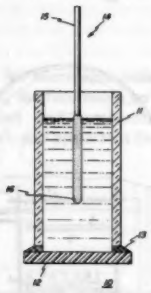
POTASSIUM ION-SPECIFIC MEMBRANE

John F. Brown, Jr.; Oliver H. LeBlanc, Jr., and Willard T. Grubb, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 18, 1971, Ser. No. 190,197

Int. Cl. G01n *27/30*

U.S. Cl. 204—195 M **2 Claims**



A potassium ion-specific membrane includes a hydrophobic elastomeric polymer with a dielectric constant of from 4 to 13, and a potassium ion-specific carrier. The hydrophobic elastomeric polymer is preferably an organopolysiloxane polycarbonate block copolymer. The potassium ion-specific carrier is selected from the group consisting of nonactin, gramicidins, valinomycin, and mixtures thereof.

3,767,554

PLASTIC ELECTROPLATING BARREL

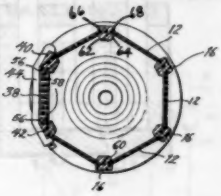
Walter F. Noonan, Wallingford, Pa., assignor to Westlake Plastics Company, Lenni, Pa.

Continuation-in-part of Ser. No. 150,985, June 8, 1971, Pat. No. 3,716,470. This application July 31, 1972, Ser. No. 276,564

Int. Cl. C23b *5/78*

U.S. Cl. 240—213 **11 Claims**

A polyhedral rotatable electroplating barrel having axial ribs and end heads made of a thermoplastic in which fiberglass strands are embedded beneath the outer surfaces thereof to provide support members having high deflection temperatures, tensile and flexural strengths and perforate panels made of a filled thermoplastic resin whose deflection temperature



approaches that of the material for the ribs and heads and means interconnecting the ribs, heads and panels whereby a good load-supporting barrel is provided which is resistant to attack by the electroplating solutions and will not distort at operating temperatures of about 180°–200°F.

3,767,555

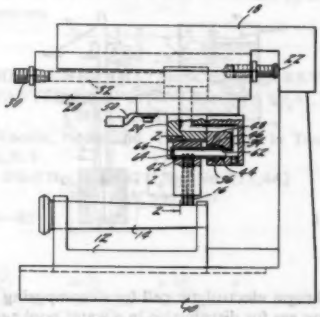
REPLACEABLE TOOL FOR ELECTROCHEMICAL DRILLING

Richard H. Shaw, Hampden, Mass., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 18, 1971, Ser. No. 189,862

Int. Cl. B23p *1/02*; B01k *3/04*

U.S. Cl. 204—224 M **7 Claims**



A replaceable tool for an electrochemical drilling operation in which several electrodes are supported by a base that is mounted as a unit on a tool support and has arrangements for connecting to the electrical supply and to the supply of electrolyte.

3,767,556

ELECTROLYZERS FOR THE PRODUCTION OF MAGNESIUM

Konstantin Dmitrievich Muzhaviev, Zheleznovodskaya ulitsa, 38, kv. 30; Sergei Petrovich Kosarev, Nalichnaya ulitsa, 39, korpus I kv. 20; Grigory Petrovich Khristjuk, 20 Linia, 7, kv. 23, all of Leningrad; Jury Nikolaevich Boiko, ulitsa Rekordnaya, 43, kv. 13, Zaporozhie; Oleg Andreevich Lebedev, Novoiz mailovsky prospekt, 26, korpus 2, Leningrad, and Vladimir Dmitrievich Yazev, Bogdana Khmelnitskogo, 66, kv. 59, Kalush Ivano-Frankovskoi Oblasti, all of U.S.S.R.

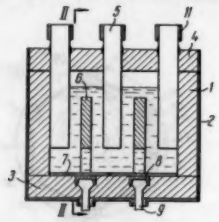
Filed Aug. 26, 1971, Ser. No. 175,090

Int. Cl. C22d *3/02*, *3/08*

U.S. Cl. 204—243 R **3 Claims**

An electrolyzer for the production of magnesium comprising a refractory material-lined bath with a bottom (hearth), a

cover and electrodes inserted into the bath and connected to



busbars, wherein on the bottom of the electrolyzer bath provision is made for a coating connected to the cathode busbar.

3,767,557

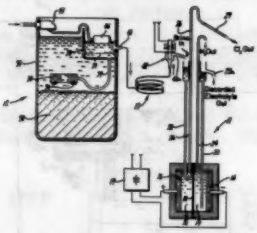
CHLORINATOR INCLUDING MEANS TO FEED AN ELECTROLYTE OF PREDETERMINED DENSITY AND MEANS TO WITHDRAW CHLORINE AGAINST A VARYING BACK PRESSURE

August Lamm, 365 Moseley Rd., Hillsborough, Calif.

Continuation-in-part of Ser. No. 725,282, April 30, 1968, abandoned. This application July 1, 1971, Ser. No. 158,859

Int. Cl. B01k *3/10*

U.S. Cl. 204—263 **22 Claims**



An diaphragm electrolytic cell for decomposing brine into free chlorine gas for distribution in a water pool against varying gas pressure. The cell has a brine inlet column, a liquid product discharge column, and a chlorine withdrawal column extending above the cell, with the brine inlet column vented to the atmosphere and connected to the anode chamber and with the liquid product discharge column vented to the atmosphere, connected to the cathode chamber, and having a liquid column pressure larger than the maximum back pressure at the point of distribution of the chlorine from the chlorine withdrawal column. A reservoir contains solid salt which is allowed to dissolve in water. The invention also includes means for automatically metering a small quantity of brine through the cell at a suitable brine concentration.

3,767,558

SILVER RECOVERY SYSTEM

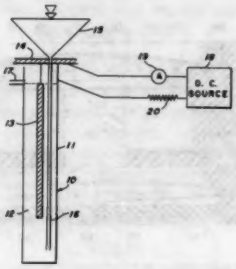
Murray Edwin Rowe, Ottawa, Ontario, Canada, assignor to Ainsley-Park Industries Ltd., Ottawa, Ontario, Canada

Filed Jan. 25, 1971, Ser. No. 109,445

Int. Cl. C23b *5/68*; C22d *1/12*

U.S. Cl. 204—269 **2 Claims**

A non-agitated electrolytic cell for the recovery of silver from photographic chemical solutions which comprises a vertical tubular cathode enclosing an anode. The cell is operated at a low current density of between 50 and 100 milliamps per square foot of effective cathode area and the solution rich in silver is supplied continuously or in batches to the lower end of the cell, while the solution depleted of its silver content flows simultaneously from the top of the cell. For processing larger volumes of solution a cellular cathode assembly is used



defining a bank of such cathode cells, there being a corresponding anode assembly with an anode disposed in each cell. The anodes are connected in isolated groups, each group being placed in circuit with an overload protection device, so that occurrence of a short-circuit in one group of anodes does not affect the operation of the remaining groups.

3,767,559

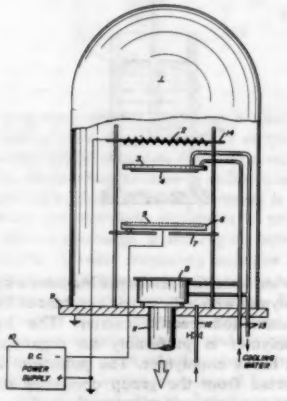
SPUTTERING APPARATUS WITH ACCORDION PLEATED ANODE MEANS

John L. Agnone, Rochester; Robert V. Fister, Hilton, and Jon C. Sheppard, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 49,468, June 24, 1970, Pat. No. 3,703,585. This application Mar. 29, 1972, Ser. No. 239,265

Int. Cl. C23c *15/00*

U.S. Cl. 204—298 **4 Claims**



A polymeric material such as Teflon polytetrafluoroethylene (PTFE) is glow coated on a substrate inside a chamber by placing a thin layer of PTFE powder in a shallow tray constituting a cathode, and applying a D.C. potential between the cathode and an anode to sputter the polymeric material and form a thin film on the substrate. The substrate can be a part of the anode. Apparatus for performing this process comprises a chamber, a cathode in the chamber for holding the polymeric material, holding means in the chamber for holding a substrate to be coated, and anode means in the chamber comprising one or more accordion

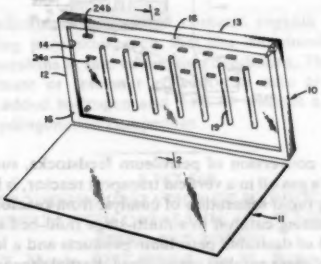
pleated sheets of metal having a surface area much greater than the surface area of the holding means for maintaining a glow discharge when a direct current is applied between the cathode and anode means.

3,767,560

METHOD AND APPARATUS FOR FORMING ELECTROPHORESIS APPARATUS AND THE LIKE

Franklin R. Elevitch, 430 Nevada St., Palo Alto, Calif.

Division of Ser. No. 877,378, Nov. 17, 1969, Pat. No. 3,635,808, and a continuation-in-part of Ser. No. 300,341, Aug. 6, 1963, abandoned, and a continuation-in-part of Ser. No. 579,089, Sept. 13, 1966, abandoned, and a continuation-in-part of Ser. No. 664,133, Aug. 29, 1967, Pat. No. 3,479,265. This application Jan. 12, 1972, Ser. No. 217,361
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 3 Claims



Thin film apparatus for electrophoresis, chemical analyses and the like is provided, the film being an aqueous gel such as agarose gel; continuous and semicontinuous methods of production are provided; and apparatus for such methods.

3,767,561

ALPHA-OLEFIN POLYMERS AS DEWAXING AIDS

Albert Rossi, Jersey City; Erik Tornqvist, Roselle; Norman Jacobson, East Brunswick, and Won Ryul Song, Jersey City, all of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 818,380, April 22, 1969, abandoned. This application July 21, 1971, Ser. No. 164,892
Int. Cl. C10g *43/06*
U.S. Cl. 208—37 8 Claims

Ziegler-type polymers comprising C_{14}–C_{24} alpha-monoolefins and having a number average molecular weight within the range between about 1,000 and about 200,000 are effective dewaxing aids for improving the efficiency of the separation of wax from hydrocarbon oils. Preferred dewaxing aids include mixtures of two or more homopolymers of C_{14}–C_{24} alpha-monoolefins and copolymers of two or more alpha-monoolefins containing from 14 to 24 carbon atoms in the molecule.

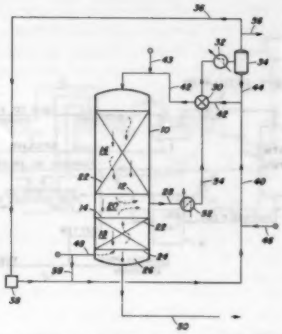
The Ziegler-type polymers when combined with Friedel-Crafts condensation products of chlorinated wax and naphthalene synergistically improve the separation of wax from petroleum oils.

3,767,562

PRODUCTION OF JET FUEL

Morgan Chuan-Yuan Sze, Upper Montclair, and James William Reilly, Westfield, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Sept. 2, 1971, Ser. No. 177,362
Int. Cl. C10g *23/00*
U.S. Cl. 208—57 13 Claims



A process for producing jet fuel from a petroleum fraction having a boiling range within the temperature range of about 135°F. to about 550°F., such as kerosene. The feed is mixed with hydrogen, and liquid recycle, preheated if necessary, and subjected to two-stage hydrogenation of aromatics to reduce the aromatics content and improve the smoke point.

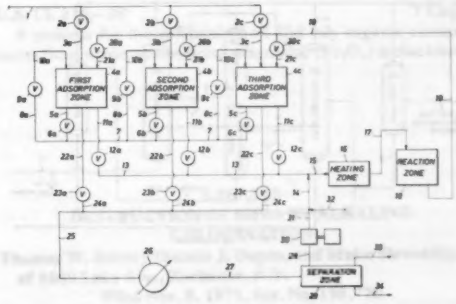
Temperature in the reactor is also controlled by the operation of the process.

3,767,563

ADSORPTION-DESORPTION PROCESS FOR REMOVING AN UNWANTED COMPONENT FROM A REACTION CHARGE MIXTURE

Robert A. Woodle, Nederland, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,442
Int. Cl. C10g *1/00*
U.S. Cl. 208—85 10 Claims

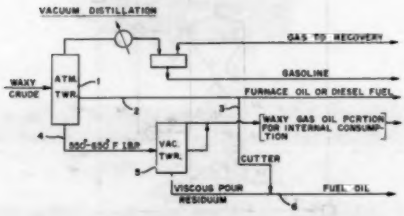


A process for converting a reactant hydrocarbon wherein a process charge stream contains such reactant in admixture with a component which interferes with the conversion reaction. The process comprises adsorbing the interfering component from the process charge mixture at a relatively low temperature; reacting the reactant hydrocarbon at suitable reaction conditions; and subsequently desorbing the interfering component into the reaction effluent at an elevated temperature. Solid adsorbents selective for the interfering component are employed in this process and no extraneous streams are employed to aid in desorbing such interfering component from the selective adsorbent.

3,767,564
PRODUCTION OF LOW POUR FUEL OILS

Douglas J. Youngblood, Groves; Thomas A. Cooper, Port Arthur, and James H. Colvert, Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed June 25, 1971, Ser. No. 156,771
Int. Cl. C10g 37/00
U.S. Cl. 208—92 5 Claims

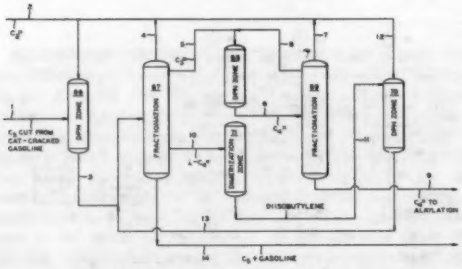


Low pour fuel oils are obtained by first converting waxy pour residua into the corresponding viscous pour residua by deep vacuum fractionation, with or without auxiliary visbreaking or thermal or catalytic cracking, and then blending with sufficient low pour cutter stock to produce fuel oils having commercially acceptable viscosities and pour points.

3,767,565
PREPARATION OF HIGH OCTANE GASOLINE USING DISPROPORTIONATION, ALKYLATION AND DIMERIZATION STEPS

Robert L. Banks, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 10, 1971, Ser. No. 206,733
Int. Cl. C10g 7/00, 37/06
U.S. Cl. 208—93 10 Claims

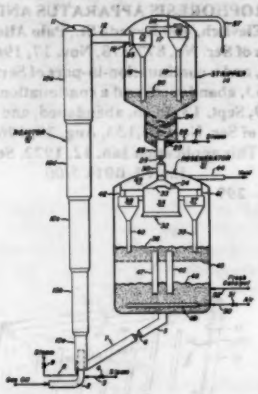


The octane value and volume of gasoline is increased by subjecting an olefinic gasoline to separation to provide a C_5 cut containing both linear and branched C_5 olefins, reacting the C_5 cut with added ethylene in the presence of an olefin disproportionation catalyst to produce isobutene and propylene, disproportionating the produced propylene to provide ethylene and n-butenes, alkylating the n-butenes with isobutane to provide a high octane alkylate, dimerizing produced isobutene to provide diisoburylene, reacting the diisobutylene with ethylene to provide isohexenes, and recombining the high octane alkylate, isohexenes, and the remaining olefinic gasolines to provide an upgraded gasoline having increased octane ratings.

3,767,566
CATALYTIC PETROLEUM CONVERSION PROCESS

Robert R. Cartmell, Crown Point, Ind., assignor to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 5,777, Jan. 26, 1970, Pat. No. 3,661,799.
This application Dec. 8, 1971, Ser. No. 206,215
Int. Cl. C10g 11/04
U.S. Cl. 208—120 18 Claims



Catalytic conversion of petroleum feedstocks, such as the cracking of a gas oil in a vertical transport reactor, is improved by effecting rapid separation of catalyst from reactor effluent and regenerating catalyst in a multi-stage fluid-bed system. A higher yield of desirable petroleum products and a lower carbon level on spent catalyst are realized. Partial regeneration of spent catalyst is effected in a first dilute-phase regeneration stage, permitting subsequent use of a high regeneration temperature in order to reach an acceptably low carbon level on regenerated catalyst without harm to sensitive conversion catalysts.

3,767,567
PROCESS FOR PREPARING OLEFINS

Tadayoshi Tomita, Yokohama; Katsutoshi Kikuchi, Fujisawa, and Takayuki Sakamoto, Tokyo, all of Japan, assignors to Toyo Engineering Corporation, Chiyoda-ku, Tokyo, Japan

Filed Nov. 22, 1971, Ser. No. 200,858
Int. Cl. C10g 11/02
U.S. Cl. 208—122 9 Claims

Olefins are manufactured by catalytically cracking a hydrocarbon feedstock by contacting said feedstock with steam at a temperature of 650°–900° C in the presence of a catalyst consisting essentially of at least 20 wt. percent of an oxide selected from the group consisting of beryllium oxide, calcium oxide and strontium oxide and the balance is aluminum oxide.

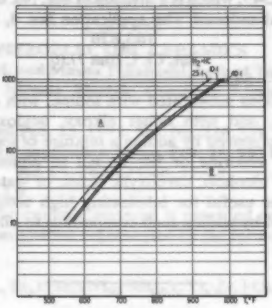
3,767,568
HYDROCARBON CONVERSION

Nai Yuen Chen, Titusville, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 27,253, April 13, 1970, and a continuation-in-part of Ser. No. 101,231, Dec. 24, 1970, and a continuation-in-part of Ser. No. 119,047, Feb. 25, 1971. This application Mar. 19, 1971, Ser. No. 126,092
Int. Cl. C10g 35/06, 39/00
U.S. Cl. 208—134 16 Claims

This disclosure relates to a method of improving the yield-octane number relationship of a reformate or reformer ef-

fluent by contacting the same at conversion conditions in the presence of hydrogen with crystalline aluminosilicate zeolites characterized by (1) having a silica to alumina ratio greater than 15 (preferably greater than 20); (2) having been crystallized from a solution containing organic cations so that the



aluminosilicate as synthesized contains organic cations and (3) having pore sizes such that the aluminosilicate sorbs methyl paraffins at said conversion conditions. The upgrading of reformate or reformer effluent can take place with or without added hydrogen and with or without a hydrogenation/dehydrogenation component.

3,767,569

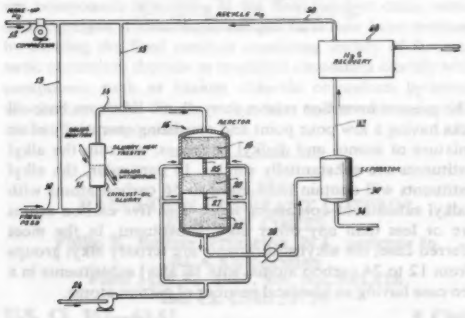
HYDRODESULFURIZATION OF HYDROCARBON RESIDUUM WITH CATALYTIC OIL-SLURRY AND FIXED-BED ZONES

Francis X. Mayer, 5277 Whitehaven St., Baton Rouge, La., and Karsten H. Moritz, 114 Goltra, Basking Ridge, N.J.

Filed Dec. 10, 1971, Ser. No. 206,816

Int. Cl. C10g *23/02*

U.S. Cl. 208—210 **13 Claims**



A process for hydrorefining, particularly, hydrodesulfurizing a hydrocarbon feedstock containing relatively high quantities of sulfur, asphaltenes, metals and ash by use of a slurry type of heat treater operated in advance of the hydrodesulfurization reactor. A catalyst is present in the heat treater in an oil slurry wherein the feedstock is desalted and demetallized and then transferred to the main reactor. The system is primarily a sulfur removal operation and hydrocarbon conversion is at a minimum.

3,767,570

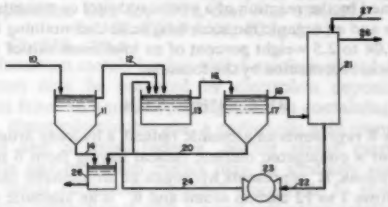
GRANULAR TO POWDERED ACTIVATED CARBON IN POLLUTED WATER PURIFICATION PROCESS

Kenneth Edward Clapp, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

Filed Sept. 22, 1971, Ser. No. 182,591

Int. Cl. C02b *1/14*; C02c *1/14*

U.S. Cl. 210—16 **13 Claims**



Process of purifying wastewater by contacting wastewater with an effective amount of spent granular activated carbon that has been ground to a powder. The resulting partially treated wastewater is then substantially separated from the powdered carbon-sludge contained therein and passed through a bed of granular activated carbon. As the granular activated carbon becomes spent, it is ground to a powder for contacting said wastewater.

3,767,571

OIL REMOVAL FROM WASTE WATERS

Walter F. Lorenc, Harvey, and James A. Hyde, Downers Grove, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Filed Dec. 17, 1969, Ser. No. 885,990

Int. Cl. B01d *15/06*

U.S. Cl. 210—30 **7 Claims**

A process for the removal of oil and oily organic contaminants from waste waters using magnetite (Fe_3O_4) is disclosed.

3,767,572

DESTRUCTION OF EDTA BY ALKALINE CHLORINATION

Thomas W. Bober; Thomas J. Dagon, and Idalee Slovonsky, all of 1669 Lake Ave., Rochester, N.Y.

Filed Nov. 8, 1971, Ser. No. 196,770

Int. Cl. C02b *1/36*

U.S. Cl. 210—50 **7 Claims**

Waste photographic processing solutions which contain ethylenediaminetetraacetate (hereinafter EDTA), such as exhausted ammonium iron EDTA bleaching or bleach-fixing solutions, are chlorinated to destroy EDTA and thereby increase the biodegradability of the solution. Chlorination can be effected by introduction of chlorine gas or by the use of hypochlorite solution. Since EDTA and complexes thereof account for a large portion of the oxygen consuming material present in photographic processing effluent, a significant source of water pollution is substantially eliminated by this method.

3,767,573

SYNTHETIC AIRCRAFT TURBINE OIL

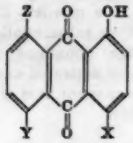
John W. Nebzydoski; Edwin L. Patmore, both of Fishkill, and Frederick G. Oberender, Wappingers Falls, all of N.Y., assignors to Texaco, Inc., New York, N.Y.

Filed Oct. 18, 1971, Ser. No. 190,310
Int. Cl. C10m *3/32*; C07c *119/00*
U.S. Cl. 252—47.5 9 Claims

Synthetic lubricating oil composition comprising a major portion of an aliphatic ester base oil having lubricating properties formed by the reaction of a pentaerythritol or trimethylolpropane and an organic monocarboxylic acid containing from about 0.01 to 2.5 weight percent of an imminium salt of thiocyanic acid represented by the formula:

$$RR'C{=}N^{+}HR''\ S^{-}CN$$

in which R represents an aromatic radical, a hydroxy aromatic radical or a conjugated olefinic radical having from 6 to 18 carbon atoms, R′ represents hydrogen or an aliphatic radical having from 1 to 12 carbon atoms and R″ is an aliphatic radical having 1 to 20 carbon atoms, and from about 0.04 to 2 weight percent of a polyhydroxy-substituted anthraquinone represented by the formula:



in which X, Y and Z each represent hydrogen or a hydroxyl group and at least one of these is a hydroxyl group.

3,767,574

GASOLINE ADDITIVE

Sidney Schiff, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 6, 1971, Ser. No. 205,361
Int. Cl. C10m *1/32*
U.S. Cl. 252—51 10 Claims

An oil composition, useful as a gasoline additive, is prepared by halogenating and aminating in succession a paraffinic lubricating oil to thus produce a composition having in the range of 2.0 to 26.0 weight percent halogen and 0.20 to 4.0 weight percent nitrogen.

3,767,575

OXIDATION RESISTANT LUBRICANT COMPOSITIONS

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 16, 1971, Ser. No. 199,372
Int. Cl. C10m *1/26*, *1/34*
U.S. Cl. 252—51.5 R 10 Claims

Lubricants, especially lubricating oils and greases, containing an acyloxy-substituted diarylamine have improved oxidation resistance.

3,767,576

LUBRICATING COMPOSITIONS CONTAINING HALOGEN AND ALKOXY, ACYLOXY, OR HYDROXY GROUPS

Edgar D. Brown, Jr., Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation-in-part of Ser. No. 75,666, Sept. 25, 1970, Pat. No. 3,676,349, which is a division of Ser. No. 666,965, Sept. 11, 1967, abandoned. This application Jan. 4, 1971, Ser. No. 103,820
Int. Cl. C10m *1/30*
U.S. Cl. 252—54.6 4 Claims

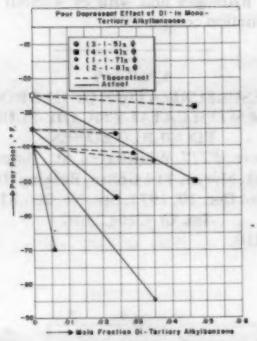
Compositions substituted with iodine, with either bromine or chlorine, and with either alkoxy, acyloxy, or hydroxy groups are prepared by adding a mixture of iodine and either bromine or chlorine or IBr or ICl to alpha-olefins in the presence of alcohols, carboxylic acids, or water. Lubricating compositions useful for lubricating high temperature alloys are prepared by adding such compounds to oils of lubricating viscosity.

3,767,577

SYNTHETIC LUBE STOCKS

Jesse K. Boggs, Seabrook, Tex., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Aug. 13, 1971, Ser. No. 171,659
Int. Cl. C10m *1/16*
U.S. Cl. 252—59 5 Claims


Pour Depressant Effect of Di - to Mono - Tertiary Alkylbenzenes
Tripentaerythritol
Actrol
Pour Point, °F
Mole Fraction Di-Tertiary Alkylbenzene

The present invention relates to synthetic lubricant base oil stocks having a low pour point and consisting essentially of an admixture of mono- and dialkyl benzenes, wherein the alkyl substituents are substantially similar. In particular, the alkyl substituents will contain from eight to 56 carbon atoms with no alkyl substituent containing more than five carbon atoms more or less than any other alkyl substituent. In the most preferred case, the alkyl substituents are tertiary alkyl groups of from 12 to 24 carbon atoms, with all alkyl substituents in a given case having an identical number of carbon atoms.

3,767,578

CARRIER MATERIAL FOR ELECTROSTATOGRAPHIC DEVELOPER

Robert J. Hagenbach, Rochester, and Myron J. Lenhard, Penfield, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed June 10, 1971, Ser. No. 151,995
Int. Cl. G03g *9/02*, *13/08*
U.S. Cl. 252—62.1 12 Claims

An electrostatographic developer mixture comprising nodular carrier beads, the nodular beads having a number average

size distribution in the range of 50 to 1,000 microns, and between about 95 and about 99.5 weight percent, based upon the developer mixture, of carrier beads relative to the finely divided toner particles electrostatically clinging to the surface of the nodular carrier beads. Such developer mixtures are useful in the development of latent electrostatographic images by cascade and magnetic brush development techniques.

3,767,579
PIEZOELECTIRC CERAMICS

Norio Tsubouchi, and Masao Takahashi, both of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

Filed Feb. 23, 1972, Ser. No. 228,739
Claims priority, application Japan, Feb. 25, 1971, 46/9776
Int. Cl. C04b *35/46, 35/48*
U.S. Cl. 252—62.9 **2 Claims**

A piezoelectric ceramic material is provided consisting essentially of a composition represented by the formula:

$$(Pb_{1-u}Bi_u)[M_t(Ni_{1/3}Nb_{2/3})_xTi_yZr_z]O_3,$$

wherein M_t represents $Ni_{u/2}$ or $(Li_{1/3}Nb_{1/2})_u$ and wherein $t+x+y+z=1.00$ and u, x, y, and z are given by a set of following inequalities:

0.02	u	0.40,
0.35	x	0.60,
0.20	y	0.50,

and

0.05	z	0.30.

3,767,580
PROCESS FOR TREATING FERROMAGNETIC CHROMIUM DIOXIDE

Tatsuji Kitamoto, and Goro Akashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

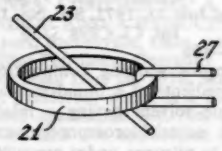
Filed Oct. 20, 1971, Ser. No. 191,094
Claims priority, application Japan, Oct. 20, 1970, 45/91823
Int. Cl. C01g *37/02*
U.S. Cl. 252—62.51 **9 Claims**

In the production of ferromagnetic chromium dioxide or modified chromium dioxide containing guest-components, such as Te or Sb, chromium ions from water-soluble chromium compounds remaining in the final product cause various disadvantages. These disadvantages have now been overcome by treating the final product consisting mainly of ferromagnetic chromium dioxide or modified chromium dioxide with a compound, such as barium chloride or sodium hydroxide, which reacts with the chromium ions to form water-insoluble chromium compounds.

3,767,581
RADIATION RESISTANT LITHIUM FERRITE CORES

Philip K. Baltzer, Princeton, N.J., assignor to RCA Corporation

Filed May 31, 1967, Ser. No. 642,428
Int. Cl. C04b *35/26*
U.S. Cl. 252—62.61 **5 Claims**



A neutron radiation resistant ferrite core comprises a ferrite which contains lithium isotopically enriched in ^7Li, and one or more of manganese, cobalt, or elements which decay under alpha particle bombardment to manganese or cobalt.

3,767,582
ETCHING COMPOSITION PREPARATORY TO NICKEL PLATING

George A. Miller, South Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

No Drawing. Original application Feb. 2, 1970, Ser. No. 8,014, now Patent No. 3,667,991. Divided and this application Oct. 19, 1971, Ser. No. 190,687
Int. Cl. C23d *3/00;* **C23g** *1/12*
U.S. Cl. 252—79.4 **4 Claims**

Aluminum metals having nickel coatings plated directly thereon may be prepared by electroless deposition of nickel from an aqueous plating solution containing nickel ions, dimethylaminoborane, a carboxylic acid complexing agent and a stress reducer. Nickel plated magnesium metals and beryllium metals may be similarly prepared. The metal surface is rendered susceptible to plating by initially contacting it with a novel activating solution containing ammonium bifluoride and either dimethylaminoborane or nitric acid, and then rinsing if nitric acid is used. Where dimethylaminoborane is used in the activating solution, the metal surface is thereafter stabilized with an aqueous stabilizing solution of dimethylaminoborane. Electroless plating is then carried out, producing a stress free hermetically sealed nickel coating of substantially uniform thickness directly on the aluminum metal, magnesium metal, or beryllium metal surface. Once such a coating is established, further plating with copper, nickel or other metals may be effected by electrolytic or electroless means. The nickel coated surface is preserved in a proper state for any such additional plating by holding it in an aqueous preservative solution of dimethylaminoborane.

3,767,583
ACTIVATOR SOLUTIONS, THEIR PREPARATION AND USE IN ELECTROLESS PLATING OF SURFACES

Earl Joseph Fadgen, Jr., Clinton, and Edward Basil Saubestre, Hamden, Conn., assignors to Enthone, Incorporated, New Haven County, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 84,500, Oct. 27, 1970. This application Aug. 13, 1971, Ser. No. 171,739
Int. Cl. C23c *3/02;* **C23f** *1/00*
U.S. Cl. 252—79.4 **34 Claims**

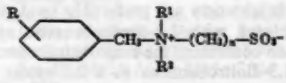
Surfaces intended to be electrolessly metal plated are treated with a colloidal catalyst metal-free acid liquid solution of a soluble, Lewis base-modified noble metal-tin halide complex until the surface is rendered catalytic. The noble metal of the complex is a noble metal which is catalytic to the deposition of the metal destined to be electrolessly plated on the surface.

3,767,584
LIME SOAP DISPERSANTS AND COMPOSITIONS CONTAINING THEM

David Graham Spencer Hirst, Whitley Bay, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Original application Sept. 22, 1970, Ser. No. 74,496, now Patent No. 3,660,470. Divided and this application Feb. 14, 1972, Ser. No. 226,346
Int. Cl. C11d *1/84, 9/32, 9/46*
U.S. Cl. 252—117 **7 Claims**

Alkylbenzyl di-lower alkylammonio alkane-1 sulfonates having the formula



wherein R is a straight or branched chain alkyl group having 8 to 24, preferably 10 to 18, carbon atoms; R^1 is

an alkyl group having 1 to 6 carbon atoms; R^2 is an alkyl group having 1 to 6 carbon atoms; and n is an integer of from 1 to 4, preferably 2 or 3. These compounds have excellent scum-dispersant properties and are effective in solid, granular, bar, or liquid soap compositions to reduce lime-scum formation. Compositions comprising higher fatty acid soaps and the alkylbenzyl di-lower alkylammonio alkane-1 sulfonates are described. Desirable results are obtained when the ratio of soap to zwitterionic, by weight, is from 3:1 to 100:1.

3,767,585

STABLE SOLVENT COMPOSITION

Shigeji Sawabe, Takaoka, Yoshikazu Genda, Higashi, Takeo Yamamoto, Takaoka, Kazuyoshi Masuyama, Tonami, and Michinori Takebayashi, Takaoka, Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

No Drawing. Filed Oct. 12, 1971, Ser. No. 188,527
Int. Cl. C11d *7/50*
U.S. Cl. 252—171 14 Claims

This invention relates to a new stabilizing mixture of additives for chlorinated aliphatic hydrocarbons to guard against decomposition, and more particularly, to a new stable solvent composition composed of chlorinated aliphatic hydrocarbons containing mixtures of stabilizing additives.

3,767,586

PROCESS FOR PREPARING STABLE AQUEOUS SOLUTIONS OF N-HALO COMPOUNDS

Andrew F. Rutkiewic, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 6,539, Jan. 28, 1970, which is a continuation-in-part of application Ser. No. 745,111, July 16, 1968, both now abandoned. This application Sept. 10, 1971, Ser. No. 179,593
Int. Cl. C01b *21/52*; D21c *3/18*
U.S. Cl. 252—187 H 8 Claims

A process for preparing stable concentrated aqueous solutions of N-halo compounds, in which water, an N-hydrogen compound, a halogen (Br_2, Cl_2 or I_2) an alkali or alkaline earth hydroxide, and a buffering compound are added to and mixed in a reaction vessel. The buffer establishes and maintains a pH in the range of 4.5 to 8.5, thereby preventing rapid decomposition of the N-halo compounds which occurs under extreme acid or alkaline conditions. The solutions are useful as household and industrial bleaches, as slimicides, and for other purposes.

3,767,587

STABLE AQUEOUS DISPERSIONS OF OPTICAL BRIGHTENING AGENTS

Uwe Claussen, Gunther Boehmke, and Wulf von Bonin, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 1, 1971, Ser. No. 130,489
Claims priority, application Germany, Apr. 7, 1970, P 20 16 470.9
Int. Cl. D06l *3/12*
U.S. Cl. 252—301.2 W 5 Claims

Process for the production of stable aqueous dispersions of sparingly water-soluble optical brightening agents, characterised in that association complexes of these brightening agents and low-molecular complex formers are introduced into aqueous solutions of polymeric compounds, which may contain surface-active agents, wherein such optical brighteners are preferably used, whose association complexes with 1,3-dinitrobenzene exhibit in a dioxan solution containing the brightening agent in a 10^{-3}-molar and 1,3-dinitrobenzene in a 2.7-molar concentration at 20° C. and a layer thickness of 1 cm. a $\Delta\Delta m$-value of between $5 \cdot 10^{-3}$ and $600 \cdot 10^{-3}$.

3,767,588

INFRARED-EXCITABLE RARE EARTH OXYFLUORIDE LUMINESCENT MATERIALS

Yoshiro Otomo, Mitaka, Hajime Yamamoto, Setagaya, Masaki Nakano, Hachioji, and Tsuyoshi Kano, Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 31, 1972, Ser. No. 222,017
Claims priority, application Japan, Jan. 29, 1971, 46/2,828
Int. Cl. C09k *1/08*
U.S. Cl. 252—301.4 H 12 Claims

Oxyfluorides of lanthanum, gadolinium, yttrium and lutetium, activated with erbium, and containing ytterbium as a sensitizer can be efficiently excited to red luminescence by infrared radiation, and can be used in certain light-producing applications and the composition of the oxyfluorides can be represented by the following general formula:

$$(Ln_{1-y-z}Yb_yEr_z)O_{x/2}F_{3-x}$$

wherein Ln is at least one element selected from the group consisting of lanthanum, gadolinium, yttrium and lutetium, and wherein x, y and z are $0.4 \leqq x \leqq 1.3$, $0.06 \leqq y \leqq 0.35$ and $0.008 \leqq z \leqq 0.10$, respectively.

3,767,589

BISMUTH-ACTIVATED GADOLINIUM NIOBATE PHOSPHORS

David A. Grisafe, Lawrence, Kans., and Carl W. Fritsch, Jr., Dushore, Pa., assignors to GTE Sylvania Incorporated

Filed May 22, 1972, Ser. No. 255,771
Int. Cl. C09k *1/46*
U.S. Cl. 252—301.4 R 7 Claims

Compounds of bismuth-activated gadolinium niobate are novel and useful blue-emitting phosphors under cathode ray and U.V. excitation.

3,767,590

METHOD OF PRODUCING NONDETERGENT, AQUEOUS WETTING SOLUTIONS

John Thomas Kenney, Trenton, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

No Drawing. Original application Feb. 2, 1970, Ser. No. 8,022. Divided and this application June 21, 1971, Ser. No. 155,285
Int. Cl. B01j *13/00*
U.S. Cl. 252—313 R 2 Claims

Aqueous wetting solutions comprise stable colloids, the solid phase of which is a hydrous oxide of one or more selected elements. The solid, particulate phase of the colloid is produced by a controlled hydrolysis and nucleation reaction which continues until solid phase particles having appropriate size and surface chemistry result. Application of the wetting solutions to any known nonwettable surface renders such surface wettable, via deposition of the particles of the solid phase onto the surfaces by short order forces. The rendering of the surfaces wettable is accomplished without effecting a physical or chemical change of the surface.

3,767,591

CONTAINER OF A MALODOROUS WARNING LIQUID FOR MALFUNCTIONING MINE VENTILATION

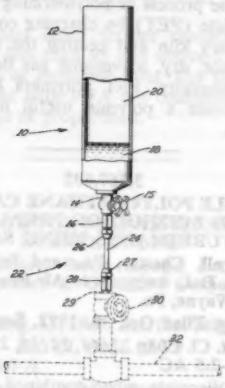
Albert B. Selleck, 19310 Caladero St., Tarzana, Calif. 91356

Filed July 23, 1971, Ser. No. 165,537
Int. Cl. C09k *3/30*
U.S. Cl. 252—408 2 Claims

The malodorous warning composition of matter includes the ingredients of a liquid mercaptan mixed with a nonflammable solvent having a relatively low vapor pressure, such as trichloromonofluoromethane, and an inert gas such as nitrogen under pressure, to form a malodorous mixture for introduction into pressurized air breathing systems, such as for mines, to warn a person of danger by the odor. This new composition of matter

has no need for external means of heating or cooling the mixture for introducing it into the pressurized air breathing system.

The process for its preparation includes the steps of introducing an inert gas under pressure into a suitable container in which the mercaptan and solvent have been previously placed, and producing a pressure internally of about 250 to 300 pounds per square inch, and sealing the container by a needle valve or other suitable means.



The warning device includes the malodorous composition of matter together with a suitable high pressure container equipped with a high pressure needle valve. The warning system includes the warning device together with an adapter on the end of the needle valve, to which is connected a feeder tube means having a fitting or coupling for connection of its outer end to a valve of its outer end to a valve of a pressured air breathing system of a facility such as a mine.

3,767,592

ACTIVATED CARBON FROM PETROLEUM COKE PRETREATED WITH POLYPHOSPHORIC ACID

Joel Kwok, Fullerton, and Alex Miller, Placentia, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed June 23, 1971, Ser. No. 156,077

Int. Cl. C01b *31/08*

U.S. Cl. 252—423 **10 Claims**

An improved method is disclosed for the production of activated carbon from petroleum coke. In the method, a particulate petroleum coke is pretreated with polyphosphoric acid having an equivalent P_2O_5 content greater than 74 weight percent and thereafter contacted with steam at a temperature of from 1300 to 1700° F. for a period sufficient to reduce the weight of said coke by at least 70 weight percent.

3,767,593

CATALYST SYSTEM FOR DIMERIZING CONJUGATED DIENES COMPRISING A DINITROSYLIRON HALIDE AND A REDUCING AGENT

Charles L. Myers, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Application Dec. 10, 1970, Ser. No. 97,016, now Patent No. 3,655,793, which is a continuation-in-part of abandoned application Ser. No. 889,748, Dec. 31, 1969. Divided and this application Jan. 3, 1972, Ser. No. 215,140

Int. Cl. B01j *11/82*

U.S. Cl. 252—429 A **12 Claims**

A dimerization catalyst system formed from (I) a dinitrosyliron halide and (II) a reducing agent, in which the reducing agent is an alkali metal hydride, a complex hydride of an alkali metal and boron or aluminum, or an organoaluminum halide.

3,767,594

DEHYDROGENATION CATALYST

Kenneth D. Vesely, Arlington Heights, and Harold D. Gass, Jr., Cicero, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Aug. 20, 1970, Ser. No. 65,718

Int. Cl. B01j *11/16, 11/74*

U.S. Cl. 252—439 **10 Claims**

A catalyst composition characterized by a method of manufacture. The catalyst composition comprises a platinum group metal, germanium, and an alkali metal composited with an alumina carrier material. The alumina carrier material is impregnated with the catalytic components, steam treated at oxidizing conditions including a temperature of from about 400° to about 1200° F., and further treated in a substantially dry atmosphere at oxidizing conditions including a temperature of from about 400° to about 1200° F., to yield a product characterized by a LOI at 900° C. of less than about 1 wt. percent prior to reduction and sulfiding.

3,767,595

PROCESS FOR PRODUCING COPPER CHROMITE CATALYSTS

Stewart Robert Montgomery, Ashton, Md., assignor to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Oct. 28, 1971, Ser. No. 193,577

Int. Cl. B01j *11/06, 11/40*

U.S. Cl. 252—454 **9 Claims**

Copper chromite of a catalyst grade is produced from dissolved cuprammonium carbonate and/or bichromate intermediate which is formed by the reaction of copper and ammonium carbonate in the presence of an oxygen containing gas. Cuprammonium bicarbonate is reacted with chromic acid or copper bicarbonate to form basic ammonium cupric chromate which on calcination at 250° C. to 450° C. for from .1 to 20 hours yields copper chromite. The principal useful feature of this process is that it is non-polluting in that effluent process liquors and gases can be recycled.

3,767,596

DEHYDROGENATION CATALYSTS

Harold E. Manning, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Filed Sept. 9, 1971, Ser. No. 179,221

Int. Cl. B01j *11/06, 11/08, 11/32*

U.S. Cl. 252—465 **7 Claims**

Beryllium chromites, especially those promoted with aluminum, have been found to be comparable to chromia-alumina type dehydrogenation catalysts, for example, in the dehydrogenation of n-butane. The aluminum is either added to the preformed beryllium chromite or is incorporated into the spinel structure of the chromite itself or added in both ways. The aluminum can be present in the catalyst from all sources in an atomic ratio of Al:Cr of 0.0004 to 1.2:1. The atomic ratio will more usually be 0.04 to 0.8:1, Al:Cr.

3,767,597

HIGH TEMPERATURE THERMISTOR COMPOSITION

Takeshi Masuyama, Takatsuki, Michio Matsuoka, Hirakata, Yoshio Iida, Suita, and Mikio Matsuura, Neyagawa, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 6, 1971, Ser. No. 159,833

Claims priority, application Japan, July 15, 1970, 45/62,369, 45/62,370, 45/62,372

Int. Cl. H01b *1/08;* **H01c** *7/04*

U.S. Cl. 252—518 **5 Claims**

A composition for a high temperature thermistor consists essentially of 50.000 to 99.995 mole percent zinc

oxide and one oxide selected from the group consisting of lead oxide, antimony oxide and barium oxide.

3,767,598

DETERGENT BUILDER

Herman A. Bruson, Woodridge, Conn., and Henry Gould, Houston, Tex., assignors to Milchem Incorporated, Houston, Tex.

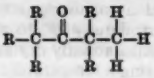
No Drawing. Filed Sept. 23, 1971, Ser. No. 183,277

The portion of the term of the patent subsequent to Apr. 24, 1990, has been disclaimed

Int. Cl. C11d *1/14, 1/24, 3/30*

U.S. Cl. 252—545 **14 Claims**

A detergent builder composition having the formula:



wherein R is $—CH_2—CH_2—COOX$, X being a member selected from the class consisting of hydrogen, alkali metals, ammonium and substituted ammonium.

3,767,599

MIXED METALLO-ORGANIC CATALYSTS FOR THE POLYMERIZATION OF EPOXY COMPOUNDS AND METHODS FOR THE POLYMERIZATION OF EPOXY COMPOUNDS USING SAID CATALYSTS

Henricus Gerardus Joseph Overmars, Zeist, and Aris van Elven, Utrecht, Netherlands, assignors to Schering AG., Bergkamen, Germany

No Drawing. Filed Dec. 29, 1971, Ser. No. 213,823

Claims priority, application Germany, Jan. 18, 1971, P 21 02 102.3

Int. Cl. C08g *23/14*

U.S. Cl. 260—2 A **10 Claims**

Catalysts, useful for the polymerization of epoxy compounds, which are mixtures of (1) an organoantimony compound of the formula

$$R_mSbX_n$$

wherein R is an organic radical, X is hydroxy, oxygen, or halogen, m is an integer from 1 to 5, and $n=5-m$, and (2) an organoaluminum compound of the formula

$$R'_3Al$$

wherein R' is alkyl and one R' may be hydrogen.

Method of polymerizing epoxy compounds such as epichlorohydrin in the presence of the mixed catalyst described above.

3,767,600

POROUS POLYMERS WITH IONIC FUNCTIONAL GROUPS BASED ON POLYFUNCTIONAL METHACRYLATES

Robert L. Albright, Churchville, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 846,271, July 30, 1969, now Patent No. 3,663,467, which is a continuation-in-part of abandoned application Ser. No. 756,392, Aug. 30, 1968. This application May 11, 1972, Ser. No. 254,816

The portion of the term of the patent subsequent to May 16, 1989, has been disclaimed

Int. Cl. C08f *15/16, 27/00, 47/08*

U.S. Cl. 260—2.2 R **8 Claims**

Porous polymers containing a polyfunctional methacrylate such as trimethylolpropane trimethyacrylate have ion exchange properties when ionic functional groups are incorporated into the resin structure.

3,767,601

SOLID PHASE POLYMERIZATION OF WASTE POLYETHYLENE TEREPHTHALATE

Kenneth Leith Knox, Circleville, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of abandoned application Ser. No. 82,169, Oct. 19, 1970. This application Sept. 1, 1971, Ser. No. 176,990

Int. Cl. C08g *53/22*

U.S. Cl. 260—2.3 **5 Claims**

A solid phase process of polymerizing waste polyethylene terephthalate (PET) by charging comminuted waste PET to a rotary kiln and heating the charge in an atmosphere of hot, dry, scavenging gas thereby increasing the intrinsic viscosity. PET polymers having increased viscosities provide a polymer useful in manufacturing durable goods.

3,767,602

SHELF-STABLE POLYURETHANE CATALYST MIXTURE AND METHOD OF PREPARING CELLULAR POLYURETHANES USING SAID MIXTURE

Felix P. Carroll, Chester, Pa., and John R. Panchak, Wilmington, Del., assignors to Air Products and Chemicals, Inc., Wayne, Pa.

No Drawing. Filed Oct. 30, 1972, Ser. No. 301,828

Int. Cl. C08g *22/44, 22/36, 22/42*

U.S. Cl. 260—2.5 AC **8 Claims**

Dibutyl tin diacetate, when combined in an amount of from 3% to 50% by weight with about 97% to about 50% by weight of the formate or acetate salt of an amine polyurethane catalyst provides a composition having an unexpectedly long shelf-stability. The tin catalyst and amine catalyst can be premixed in the desired proportions and stored. At a later time, the desired amount of the mixture can be introduced into the urethane precursor system to very effectively transform the precursor into a satisfactory polyurethane cellular product.

3,767,603

METHOD FOR PREPARING SYNTHETIC RESIN COMPOSITIONS FROM VINYL MONOMERS

Shunichi Koyanagi and Kinya Ogawa, Yokohama, and Yoshiro Onda, Naoetsu, Japan, assignors to Shinetsu Chemical Company, Tokyo, Japan

No Drawing. Filed Aug. 30, 1971, Ser. No. 176,330

Claims priority, application Japan, Sept. 1, 1970, 45/76,820

Int. Cl. C08d *1/09;* **C08f** *1/13*

U.S. Cl. 260—17 A **6 Claims**

Hydroxybutylhydroxyethyl cellulose is employed as an emulsifier in the emulsion polymerization of vinyl monomer, to produce synthetic resin emulsions. The emulsions thus obtained possess superior stability especially against any pigments and salts that are usually present therein. They are effective as paints, adhesives, textile-finishing agents, etc.

3,767,604

COMPATIBLE MIXTURES OF MODIFIED STARCH AND POLYVINYL ALCOHOL

Erling T. Hjermstad and Leonard J. Coughlin, Cedar Rapids, Iowa, assignors to Penick & Ford, Limited, Cedar Rapids, Iowa

No Drawing. Original application July 15, 1969, Ser. No. 841,961. Divided and this application Oct. 29, 1971, Ser. No. 194,022

Int. Cl. C08d *9/06*

U.S. Cl. 260—17.4 ST **14 Claims**

Starch-polyvinyl alcohol (PVA) formulations are prepared from an etherified depolymerized starch product,

which consists essentially of starch containing —COOX groups, wherein X is a cation selected from Na^+, K^+, or NH_4^+, in the amount of 0.3 to 3% by weight based on said product of —COONa, or molar equivalent of —COOK or —$COONH_4$, said —COOX groups being present as starch—O—CH_2—COOX, or as a mixture of starch—O—CH_2—COOX and starch—COOX, said mixture containing at least 0.1%—COONa, or molar equivalent of —COOK or —$COONH_4$, as said

starch—O—CH_2—COOX,

said starch product being further characterized by an alkali fluidity of less than 95 and above 5 and by being substantially free of inorganic salts. The formulations of the starch product with PVA are compatible and stable over a wide range of proportions.

3,767,605

METHOD FOR PREPARATION OF RUBBER CRUMB

Robert A. Gerlicher, Baton Rouge, La., assignor to Copolymer Rubber & Chemical Corporation, Baton Rouge, La.

Filed Aug. 13, 1969, Ser. No. 849,713

Int. Cl. C08c *11/72*

U.S. Cl. 260—23.7 A 18 Claims

The preparation of rubber crumb preferably in the form of black masterbatch crumb in which the latex is coagulated during a first coagulation step to produce the rubber crumb and a serum which contains some uncoagulated polymeric material which subsequently coagulates to form a rubber layer on the surface of the crumb and in which carbon black is introduced subsequent to coagulation to be taken up with the rubber layer that is formed during coagulation of the uncoagulated polymeric material remaining in the serum to produce a less tacky crumb and which includes the modifications wherein in addition to or separate and apart from the carbon black, additions can be made of salts, oxides and carbonates of metals capable of reaction to form a soap with the organic acids remaining in the crumb and which includes the further modification of treating the surface of the crumb with a low molecular weight alcohol or low melting point paraffin during the elevated temperature water washing step to take up carbon black or other compounds described in a layer formed on the surface of the crumb.

3,767,606

BLEND OF METHACRYLIC RESIN WITH ETHYLENE:VINYL ACETATE COPOLYMER-VINYL CHLORIDE GRAFT COPOLYMER

Hiroshi Kishikawa, Toyonaka, Kiyoshi Yasuno, Ibaraki, and Shuji Kitamura, Toyonaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka-fu, Japan

Filed Apr. 21, 1971, Ser. No. 135,864

Claims priority, application Japan, Apr. 21, 1970, 45/34,454

Int. Cl. C08f *37/18*

U.S. Cl. 260—23 AR 12 Claims

A thermoplastic resin composition excellent in transparency and resistance to impact which comprises a mixture containing about 1 to about 99% by weight of a methacrylic resin, and a balance of an ethylene:vinyl acetate copolymer-vinyl chloride graft copolymer wherein the ethylene:vinyl acetate copolymer component is dispersed in an "island state," admixed with from 0 to about 30 parts by weight of a vinyl chloride resin per 100 parts by weight of the mixture.

3,767,607

RUBBER SEALANT COMPOSITION

Julius L. Schneider, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 877,461, Nov. 17, 1969. This application Aug. 31, 1971, Ser. No. 176,678

Int. Cl. C08d *9/12*

U.S. Cl. 260—27 BB 6 Claims

Stable, thixotropic sealing compositions suitable for use as container end gasket and sealant materials are prepared from a solids mixture of a rubber compound, a tackifying resin, and a surface active filler, the solids mixture being dispersed in a water-immiscible organic solvent which is a solvent for the rubber composition, the filler having been treated with an amount of water sufficient to cause complete hydration of the filler.

3,767,608

PRESSURE SENSITIVE COLD SEALING MATERIAL

Edwin C. Hand, Parma, Ohio, assignor to Parr, Inc., Cleveland, Ohio

No Drawing. Filed Sept. 9, 1971, Ser. No. 179,204

Int. Cl. C08f *45/04, 45/14, 45/52*

U.S. Cl. 260—28.5 R 5 Claims

A waterproof and weatherproof tape is provided which is pressure sensitive at ambient temperatures and which has exceptional adhesion to the surface of all building materials so that it is quickly and easily applied for patching, flashing, sealing, expansion joints and other applications of a similar nature.

3,767,609

PROCESS FOR THE SALT-FREE MANUFACTURE OF ARTICLES FROM LINEAR AROMATIC POLYAMIDES IN A LACTAM SOLVENT

Rudolf Gabler, Uitikon-Waldegg, Josef Studinka, Zurich, and Heinz Lussi and Clau Berther, Chur, Grisons, Switzerland, assignors to Inventa AG fur Forschung und Patentverwertung Zurich, Zurich, Switzerland

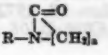
Filed Jan. 26, 1972, Ser. No. 220,898

Claims priority, application Switzerland, Feb. 9, 1971, 1,868/71

Int. Cl. C08g *51/44*

U.S. Cl. 260—30.2 13 Claims

An improved process for the preparation of shaped articles wherein a polyamide is formed by the polycondensation of a corresponding diamine and a corresponding acid chloride in a solvent. The solvent having the formula:



whrein R is an alkyl radical having 1–4 carbon atoms and *n* is a whole number between 5 and 7.

3,767,610

THERMOPLASTIC MOLDING COMPOSITIONS ON THE BASIS OF POLYOXYMETHYLENES

Karlheinz Burg, Langenhain, Taunus, and Ludwig Brinkmann and Ernst Wolters, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Nov. 24, 1971, Ser. No. 202,021

Claims priority, application Germany, Nov. 26, 1970, P 20 58 126.4

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 AL 4 Claims

The invention relates to thermoplastic molding compositions on the basis of polyoxymethylenes containing

boron nitride as a nucleating agent in amounts of from 0.0005 to 0.04% by weight, relative to the total mixture, and the production of shaped articles with improved properties therefrom.

3,767,611

HEAT RESISTANT POLYMERS AND REINFORCED PLASTICS MATERIAL PRODUCED THEREFROM

Brenda Mary Parker, Farnborough, England, assignor to National Research Development Corporation, London, England

No Drawing. Filed Feb. 10, 1972, Ser. No. 225,304
Claims priority, application Great Britain, Feb. 19, 1971, 4,968/71, 4,979/71
Int. Cl. C08g *51/08*
U.S. Cl. 260—37 R 10 Claims

A process of producing a soluble fusible pre-polymer is described in which at least one of toluene and xylene is reacted with p-xylyleneglycol dimethyl ether in the presence of a mild Friedel-Crafts type catalyst so that the toluene and/or xylene react with the p-xylyleneglycol dimethyl ether with the elimination of methanol, the reaction being allowed to proceed almost to the gelation point. The pre-polymers produced are particularly suitable for making carbon fibre reinforced plastics materials.

3,767,612

FRICTION ELEMENT COMPOSITION

Frank S. Grazen, Melvin L. Buike, and Frank M. Bryzinsky, North Tonawanda, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation of application Ser. No. 872,737, Oct. 30, 1969, now Patent No. 3,658,751. This application Oct. 12, 1971, Ser. No. 188,596
Int. Cl. C08g *37/18, 51/10*
U.S. Cl. 260—38 11 Claims

A friction binder for a friction element composition, especially useful where cashew nut shell oil and/or vegetable oils have been used in a phenolic resin composition, may be prepared by blending a non-oxyalkylated resole with resin selected from the group consisting of an oxyalkylated resole, alkylated resole, an oxyalkylated novolac, an alkylated novolac, and mixtures thereof. The friction element composition is prepared by adding to this binder asbestos fiber and friction imparting materials, and curing the resultant material.

3,767,613

CARBON BLACK PIGMENTED FLAME RETARDANT THERMOPLASTIC POLYMER COMPOSITIONS STABILIZED AGAINST DEGRADATION AT POLYMER MELT TEMPERATURES

James S. Dix, Greenville, and Jerry O. Reed, Mauldin, S.C., assignors to Phillips Petroleum Company

No Drawing. Filed Jan. 28, 1972, Ser. No. 221,791
Int. Cl. C08f *45/08, 45/62*
U.S. Cl. 260—41 B 7 Claims

Thermal degradation of carbon black pigmented flame retardant thermoplastic polymer compositions is substantially reduced by sulfur and/or organosulfur compounds.

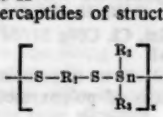
3,767,614

POLYMERIC TIN MERCAPTIDE STABILIZERS FOR VINYL HALIDE POLYMERS

Bernard Buchholz, Blue Bell, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Original application Sept. 22, 1969, Ser. No. 860,094, now Patent No. 3,646,081, dated Feb. 29, 1972. Divided and this application Nov. 9, 1971, Ser. No. 197,144
Int. Cl. C08f *45/62*
U.S. Cl. 260—45.75 K 3 Claims

Polymeric tin mercaptides of structure



where R_1 is the hydrocarbon residue of a cycloaliphatic dimercaptan, R_2 and R_3 are alkyl groups of 4 to about 10 carbon atoms, and x is an integer from about 2 to about 10. The compounds of the invention are useful as non-toxic thermal stabilizers for polymers such as polyvinyl and polyvinylidene halides.

3,767,615

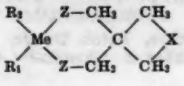
STABILIZATION OF HALOGEN CONTAINING POLYMERS

Peter E. Throckmorton and William J. McKillip, Worthington, Ohio, and Harvey J. Richards, Savage, Minn., assignors to Ashland Oil, Inc., Columbus, Ohio

No Drawing. Filed Feb. 28, 1972, Ser. No. 227,653
Int. Cl. C08f *45/56, 45/62;* C08g *45/56, 45/62*
U.S. Cl. 260—45.75 R 13 Claims

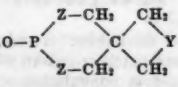
Compositions comprising halogen containing polymers and at least one organic compound in an effective stabilizing amount having structural formula selected from the group of:

(1)



and

(2)



wherein Me is a Group IV–A metal; X is O, S, or CH_2; Y is S or CH_2; each Z individually is O or S; and each R, R_1, and R_2 individually is alkyl, aryl, cycloalkyl, aralkyl, or alkaryl. Also, the organic compounds and their method of preparation are provided.

3,767,616

PROCESS FOR PRODUCING POLYAMIDOXIMES AND POLY(BISBENZIMIDAZOBENZOPHENANTHROLINE) (BBB) TYPE POLYMERS DERIVED THEREFROM

Carl N. Zellner, New Hope, Pa., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,749
Int. Cl. C08g *30/22*
U.S. Cl. 260—47 R 24 Claims

Process for the preparation of BBB-type polymers which comprises reacting at temperatures of from about 0° to about 100° C. a carbonyl halide, e.g., phosgene, with an imidazole polymer for a period of time required to form the characteristics BBB type linkages. The imidazole polymer is preferably formed by the reaction of a sulfonyl halide with an amidoxime polymer at temperatures of from about 0° to about 90° C. The amidoxime polymer is preferably prepared by reaction of an aromatic diamine with a bis(hydroxamoyl halide) or a derivative thereof. Formation of the polyamidoxime is preferably conducted in the presence of a solvent, which may or may not also function as an acid-acceptor; if not, then preferably also in the presence of an acid-acceptor. The preferred acid-acceptors are those which are insoluble in the reaction mixture—most preferably melamine and benzoguanamine. In a preferred prior step, aromatic bis(hydroxamoyl halide) reactants are made by the reaction of dialkyl aromatic precursors with, e.g., nitrosyl halide. Reactive amine or hydroxamoyl halide terminal groups of the polyamidoximes or imidazole or BBB type polymers may be reacted with other compounds or polymers which contain groups reactive therewith in order to further extend the poymer chains. Novel polyamidoximes.

3,767,617

POLYCARBOXYLIC ACID CURING AGENT FOR POLYEPOXIDE RESIN MIXTURES

Hans Batzer, Arlesheim, Friedrich Lohse, Allschwil, and Rolf Schmid, Reinach, Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed May 17, 1971, Ser. No. 144,267

Claims priority, application Switzerland, May 27, 1970, 7,834/70

Int. Cl. C08g *30/12*

U.S. Cl. 260—47 EA 6 Claims

Curable moulding compositions, coating compositions and adhesives which contain a polyepoxide compound, for example a liquid polyglycidyl ether of bisphenol A or a liquid cycloaliphatic epoxide resin, and, as the curing agent, a liquid or relatively low-melting ester-tricarboxylic acid or ester-tetracarboxylic acid, which is obtained by reaction of a 3-hydric or 4-hydric aliphatic or cycloaliphatic polyalcohol, for example glycerol, 1,2,6-hexanetriol, trimethylolpropane or pentaerythritol, with glutaric anhydride or with glutaric acid and another aliphatic dicarboxylic anhydride.

The low viscosity and the high reactivity of the resin/curing agent mixture permits good curing at relatively low temperatures. The mouldings obtained are distinguished by good flexibility and by exceptionally high impact strength, tensile strength and flexural strength.

3,767,618

PROCESS FOR THE PREPARATION OF EPOXY RESINS BY INTERFACIAL CONDENSATION AND THE RESULTANT RESINS

Thomas Joseph Hairston and Wilbur Lee Bressler, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of abandoned application Ser. No. 74,845, Sept. 23, 1970. This application Sept. 23, 1971, Ser. No. 183,052

Int. Cl. C08g *30/04*

U.S. Cl. 260—47 EP 7 Claims

An improvement in the preparation of epoxy resins from a polyhydroxyl-containing compound, such as bisphenol A, and a halohydrin, such as epichlorohydrin, in the presence of a dehydrohalogenation agent such as sodium hydroxide by interfacial condensation is disclosed wherein the improvement is conducting the reaction in the presence of water, in the amount of 3–20 parts by weight per part of combined reactants, as the sole reaction medium other than the reactants and compounds attendant to the reaction such as the dehydrohalogenating agent and the epoxy resins produced thereby characterized as having comparatively low solutions viscosities.

3,767,619

PROCESS FOR THE PREPARATION OF POLY(DIHALOPHENYLENE) ETHERS

Glenn D. Cooper, Delmar, N.Y., assignor to General Electric Company

No Drawing. Filed Oct. 14, 1971, Ser. No. 189,194

Int. Cl. C08g *23/18*

U.S. Cl. 260—47 ET 19 Claims

Poly(2,6-dihalo-1,4- and 3,5-dihalo - 1,2 - phenylene) ether homopolymers and copolymers thereof with 2,6-disubstituted phenols are provided by polymerizing a dry salt of the corresponding 4-halophenolate with a free radical initiator in the complete absence of water and in the presence of a complexing agent which contains at least one phosphorus-nitrogen bond.

3,767,620

MELT STABLE POLYKETONE COMPOSITIONS

Rudolph J. Angelo, Wilmington, Del., Roland Darms, Therwil, Switzerland, and Robert D. Wysong, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 24, 1971, Ser. No. 201,872

Int. Cl. C08g *23/20*

U.S. Cl. 260—47 R 5 Claims

Polyketones derived from diphenyl ether and terephthaloyl and isophthaloyl halides by Friedel-Crafts synthesis having superior melt stability, and a process for their preparation comprising reducing xanthydrol endgroups to xanthene groups.

3,767,621

PROCESS OF PREPARING POLYESTERS FROM HYDROXYBENZOIC ACIDS AND DERIVATIVES, AND POLYESTER PRODUCT PREPARED THEREFROM

Mamoru Suzuki, Toyonaka, Mikio Hayashi, Nishinomiya, Kazuo Hieda, Akashi, Yoshiro Murata and Motomasa Ohsu, Minoo, Kazumi Yoshigoe, Takarazuka, and Norio Kotera, Amagasaki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

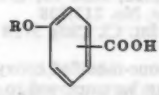
No Drawing. Filed Dec. 27, 1971, Ser. No. 212,695

Claims priority, application Japan, Dec. 29, 1970, 46/124,422

Int. Cl. C08g *17/02*

U.S. Cl. 260—47 C 4 Claims

Polyesters are produced by polymerizing a monomer compound represented by the general formula



where R represents a hydrogen atom of a group

R' being an alkyl group having 1 to 3 carbon atoms, a phenyl group or a substituted phenyl group by polycondensation without using any catalyst. The polymerization can be carried out by solution condensation, melt condensation or solid phase condensation. The present polyesters have a good color tone and good electrical properties, and are readily applicable to fibers, films, paints or plastics.

3,767,622

POLY(HYDROXYARYLPOLYMETHYLENESULFONIUM) ZWITTERIONIC MONOMERS AND SURFACE COATINGS THEREFROM

Melvin J. Hatch, Socorro, N. Mex., and Donald L. Schmidt and Hugh B. Smith, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

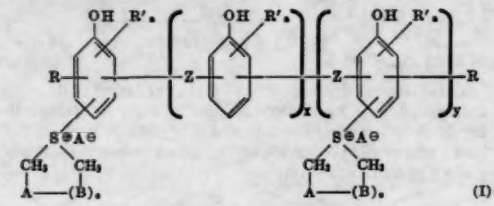
No Drawing. Continuation-in-part of abandoned application Ser. No. 95,923, Dec. 7, 1970, which is a division of application Ser. No. 866,762, Oct. 15, 1969, now Patent No. 3,660,431. This application Apr. 18, 1972, Ser. No. 245,181

Int. Cl. C08g *23/00*

U.S. Cl. 260—47 R 15 Claims

Poly(hydroxyarylpolymethylenesulfonium) salts (I), prepared by condensation of a polyphenolic resin with a cyclic sulfide, are converted into a sulfonium hydroxide

inner salt (II), a reactive zwitterionic monomer. These zwitterionic monomers thermally polymerize to yield water-insoluble, thermoset resins useful as adhesives, coatings, films, and impregnants. Applied to non-porous surfaces, such as glass and wire, hard surface coatings with high impact resistance coupled with good water and chemical resistance are obtained.



(I)

3,767,623
1-(NAPHTHYL AND NAPHTHLOXY)-ACETYL-2,2-DIALKYL HYDRAZINE ACIDS
Gerhard H. Alt, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Dec. 30, 1971, Ser. No. 214,382
Int. Cl. C07c 103/30
U.S. Cl. 260—558 H 4 Claims

The 1 - (naphthyl and naphthyloxy)-acetyl-2,2-dialkyl hydrazine acids have been found to be active pre-emergent herbicides. These compounds are especially active against Canadian thistle and field bindweed.

3,767,624
OXAZOLIDINONE MODIFIED EPOXY NOVOLAC RESIN
James A. Clarke, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation-in-part of abandoned application Ser. No. 48,525, June 22, 1970. This application Dec. 27, 1971, Ser. No. 212,708
Int. Cl. C08g 5/18
U.S. Cl. 260—59 18 Claims

Novel oxazolidinone-modified epoxy novolac resins are disclosed which may be employed to prepared adhesives having excellent properties when exposed to conditions of high humidity.

3,767,625
SYNTHETIC FIBERS HAVING IMPROVED SOIL AND STAIN REPELLENCY
Bryce C. Oxenrider, Florham Park, and Cyril Woolf, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Original application Oct. 17, 1969, Ser. No. 867,368, now Patent No. 3,646,153. Divided and this application Dec. 6, 1971, Ser. No. 205,424
Int. Cl. C08g 39/04
U.S. Cl. 260—75 N 4 Claims

The soil and stain repellency of extruded filaments of a synthetic resin can be improved by incorporating in the resin a small amount, about 1%, of an amphipathic compound having from one to four fluoroalkyl groups pendent from an organic radical. The repellency is provided by the fluoroalkyl groups, which tend to be concentrated at the surface of the fiber.

3,767,626
PREPOLYMERS AND HEAT-RESISTANT RESINS DERIVED THEREOF
Serge Laurent, Bron, and Maurice Mallet, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed Dec. 17, 1969, Ser. No. 885,957
Claims priority, application France, Dec. 19, 1968, 179,313
Int. Cl. C08g 20/00
U.S. Cl. 260—78 UA 5 Claims

Prepolymers useful in preparing moulded articles, are produced by mixing and heating an unsaturated N,N'-bisimide, a diprimary diamine, and trimellitic anhydride. Compositions are produced by mixing the prepolymers with one or more fillers or pigments.

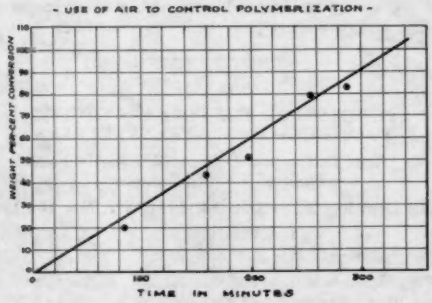
3,767,627
PREPARATION OF POLYLACTONES HAVING ESTER END GROUPS
Lowhardt A. A. Schoen, Geleen, Netherlands, assignor to Stamicarbon N.V., Heerlen, Netherlands
No Drawing. Filed Dec. 7, 1971, Ser. No. 205,752
Claims priority, application Netherlands, Dec. 10, 1970, 7018015
Int. Cl. C08g 17/14
U.S. Cl. 260—78.3 R 6 Claims

An improved process for the preparation of polylactones having blocked end-groups is disclosed wherein a polylactone, a mixture of polylactones, or a mixture of polylactone and lactone monomer is reacted, in the presence of a catalyst, with at least one modifier which contains at least one ester group not included in a lactone ring and which carries no reactive hydrogen substituents.

3,767,628
AGE RESISTERS AND AGE RESISTANT POLYMERIC COMPOSITIONS
Richard H. Kline, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
No Drawing. Original application June 23, 1969, Ser. No. 835,741, now Patent No. 3,658,769. Divided and this appplication Jan. 17, 1972, Ser. No. 218,467
Int. Cl. C08d 3/06; C08f 27/08; C08g 20/20
U.S. Cl. 260—78 UA 15 Claims

Amide and imide age resisters such as N-(4-anilinophenyl) acrylamide, N-(4-anilinophenyl) maleamic acid and N-(4-anilinophenyl) maleimide, age resistant polymers having amide and imide age resisters physically combined therewith and age resistant polymeric compositions prepared by free radical polymerization techniques involving the use of said amides and imides as monomers.

3,767,629
USE OF AIR TO CONTROL POLYMERIZATION OF WATER-SOLUBLE MONOMERS
Barney Vallino, Jr., Homewood, and Donald R. Anderson, Oswego, Ill., assignors to Nalco Chemical Company, Chicago, Ill.
Continuation-in-part of abandoned application Ser. No. 172,796, Aug. 18, 1971. This application Oct. 12, 1971, Ser. No. 188,497
Int. Cl. C08f 15/02, 1/13, 3/90
U.S. Cl. 260—80.3 N 9 Claims



Air modulation may be used for the control of certain water-soluble vinyl addition polymerization processes in production size equipment.

3,767,630

PROCESS FOR THE PREPARATION OF LINEAR, HIGH MOLECULAR WEIGHT, SULPHUR VULCANIZABLE COPOLYMER OF ETHYLENE, PROPOLYENE AND 1,3-BUTADIENE AND CATALYST SYSTEMS USED THEREIN

Gino Dall'Asta and Antonio Carbonaro, Milan, Italo Borghi, Ferrara, and Alberto Greco, Milan, Italy, assignors to The B. F. Goodrich Company, Akron, Ohio

No Drawing. Continuation of application Ser. No. 2,538, Jan. 8, 1970, now Patent No. 3,682,870. This application Jan. 3, 1972, Ser. No. 215,231

Int. Cl. C08f *1/36*

U.S. Cl. 260—807 13 Claims

Process for the preparation of linear, high molecular weight sulphur vulcanizable copolymers of ethylene, propylene and butadiene in the presence of catalytic systems prepared in aromatic solvents and comprising hydrocarbon soluble vanadium compounds, organic aluminum compounds containing halogen, and the product of the reaction between dialkyl aluminum halides and oxygen comtin oxides of the formula $R_3Sn—O—SnR_3$, also said catalytic systems.

3,767,631

PROCESS FOR THE PRODUCTION OF ACRYLONITRILE COPOLYMERS CONTAINING TERTIARY ALIPHATIC OR CYCLOALIPHATIC AMINO FUNCTIONS

Helmut Engelhard, Leverkusen, and Heinrich-August Rinkler and Günther Nischk, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 17, 1971, Ser. No. 181,585

Claims priority, application Germany, Sept. 18, 1970, P 20 46 086.0

Int. Cl. C08f *1/62*

U.S. Cl. 260—80.73 10 Claims

The present invention relates to a process for the production of copolymers of at least 60% by weight of acrylonitrile, 0.5 to 20% by weight of a polymerisable compound containing an aliphatic or cycloaliphatic tertiary amine function, and optionally up to 20% by weight of another polymerisable compound from the group of vinyl, vinylidene and methacryloyl derivatives, by copolymerisation in acid aqueous medium with redox catalyst systems, which consists of a peroxidic compound and a mercapto compound, in particular hydrogen peroxide and thioglycol.

3,767,632

PROCESS FOR COPOLYMERIZING CONJUGATED DIENES

Adel F. Halasa, Bath, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of abandoned application Ser. No. 761,831, Sept. 23, 1968. This application May 3, 1971, Ser. No. 139,804

Int. Cl. C08f *19/06, 19/08*

U.S. Cl. 260—83.7 3 Claims

A diene of 4 to 6 carbon atoms and styrene or other vinyl aromatic monomer, including alkylated vinyl aromatic monomers, are copolymerized in a hydrocarbon solvent using a substantial amount of each monomer and utilizing as the catalyst, alkyllithium and potassium hydroxide. They may be added separately or may be complexed before being added to the reaction mixture.

The resulting copolymer is a copolymer of substantially constant composition (i.e. a copolymer containing no substantial block of vinyl monomer); and it has substantially the microstructure of a normal polymer initiated by an organolithium catalyst. The diene may be butadiene, isoprene, piperylene or 2,3-dimethylbutadiene or a mixture thereof. The vinyl aromatic monomer may be styrene or an alkylated styrene or vinyl naphthylene or alkylated vinyl naphthylene or a mixture thereof.

3,767,633

HIGH TEMPERATURE POLYMERIZATION PROCESS AND VINYL CHLORIDE POLYMER PRODUCTS THEREFROM

Joseph J. Dietrich, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 761,840, Sept. 23, 1968. This application Sept. 15, 1971, Ser. No. 180,848

Int. Cl. C08f *3/30, 15/06, 15/30*

U.S. Cl. 260—87.1 7 Claims

Vinyl chloride, or mixtures thereof with at least one monomer copolymerizable therewith are polymerized in aqueous suspension in the presence of a free-radical type initiator, employing polymerization temperatures of from 90° C. to 165° C. and reaction pressures ranging up to 5000 p.s.i.g. The thermally-stable polymeric products obtained exhibit useful properties, although of extremely low average molecular weight. In the process, particularly at the upper range of the polymerization temperatures utilized, addition of the vinyl chloride monomer is found to proceed equally by head-to-head coupling (or tail-to-tail coupling) as by the usual head-to-tail addition effected in conventional polymerization processes. Depending upon their composition, the vinyl chloride polymer products are useful, e.g., as adhesives, as flame retardants, as processing aids for other polymers, as coating resins and in formulations for vinyl foam and flooring products.

3,767,634

COPOLYMERIZATION OF CHLOROTRIFLUOROETHYLENE AND ETHYLENE USING A REDOX CATALYST

Lacey E. Scoggins, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Dec. 15, 1971, Ser. No. 208,406

Int. Cl. C08f *1/62*

U.S. Cl. 260—87.5 A 10 Claims

An efficient process for the copolymerization of chlorotrifluoroethylene and ethylene is provided by contacting a mixture of the monomers in an aqueous system with a redox catalyst system comprising a persulfate oxidizing agent, an ammonium or alkali metal sulfur-containing salt reducing agent, and a buffering agent. A preferred catalyst system is a mixture of potassium persulfate, sodium bisulfite, and sodium tetraborate.

3,767,635

PROCESS FOR POLYMERIZATION OF OLEFIN

Kazuo Yamaguchi, Masayoshi Hasuo, and Isao Ito, Tokyo, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed Dec. 3, 1971, Ser. No. 204,749

Claims priority, application Japan, Dec. 11, 1970, 45/110,253; Dec. 15, 1970, 45/112,257

Int. Cl. C08f *1/54, 3/06, 15/40*

U.S. Cl. 260—88.2 R 7 Claims

Olefin polymerization is conducted using a three component catalyst system comprising: (1) chromium oxide supported on silica or silica-alumina, (2) pentaalkylsiloxy-

alane or dihydrocarbyl aluminum hydrocarbon oxide and (3) an organoaluminum compound having the formula:

$$AlR_nX_{3-n}$$

wherein R represents a hydrocarbon group; X represents a halogen atom and *n* represents an integer of 1–3.

3,767,636

SEMISOLID PROPELLANT AND THRUSTOR THEREFOR

Aldo V. La Rocca, Villanova, Pa., assignor to General Electric Company

Continuation of abandoned application Ser. No. 870,893, Oct. 31, 1969, which is a division of application Ser. No. 771,570, Oct. 29, 1968, now Patent No. 3,575,003.

This application Sept. 20, 1971, Ser. No. 182,208

Int. Cl. C08f *3/26*

U.S. Cl. 260—92.1 **1 Claim**

A wax-like working substance for electrically powered thrust engines is produced by prolonged heating in vacuo of liquid or soft grease per fluorocarbon polymers. This product flows very readily under surface tension, through tapering passages, moving slowly in its wax-like condition, and more rapidly when heated and so more fluid. It ablates with no residue. These properties permit optimal operation of a thrustor in which fuel is fed radially inward between radially oriented planar electrodes to a central cylindrical or conical aperture.

3,767,637

PROCESS OF PRODUCING POLYVINYL CHLORIDE-CONTAINING POLYMERS

Rolf Egli, Sins, Switzerland, assignor to Lonza Ltd., Basel, Switzerland

No Drawing. Filed Oct. 15, 1971, Ser. No. 189,776

Claims priority, application Switzerland, Oct. 20, 1970, 15,434/70

Int. Cl. C08f *3/22*

U.S. Cl. 260—92.8 W **5 Claims**

Process of producing polyvinyl chloride-containing polymers of porous grain structure, wherein vinyl chloride monomer or vinyl chloride monomer in admixture with other ethylenically unsaturated monomers is suspension polymerized in the presence of an emulsifier. In accordance with the invention, the emulsifier is of organophilic nature and is a metal salt of a fatty alcohol polyglycol ether carboxylic acid of the formula

$$Me—[OOCCH_2O(CH_2CH_2O)_x(CH_2)_nCH_3]_m$$

wherein Me is at least one of the metals Mg, Ca, Ba, Cd, Zn, Al, Pb or Sn; *m*, in dependence on the valence of the metal, stands for 2, 3 or 4; *x* is a number of from 0 to 20 and *n* is a number of from 6 to 20.

3,767,638

POLYOLEFINE COMPOSITION

Bernard Steven Woodward Johnson, St. Albans, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Nov. 8, 1971, Ser. No. 196,758

Int. Cl. C08f *29/04, 45/00*

U.S. Cl. 260—93.7 **7 Claims**

Polyolefines such as polyethylene and polypropylene contain as a prodegradant a compound containing a conjugated system of at least 3 double bonds. The preferred prodegradants are quinones, e.g. anthraquinone.

3,767,639

PROCESS FOR THE PREPARATION OF SECRETIN

Miklos Bodanszky, Princeton, Miguel A. Ondetti, Highland Park, Malcolm H. von Saltza, Millstone, and Venkatachala L. Narayanan and Seymour D. Levine, North Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 736,947, Apr. 12, 1968, which is a division of application Ser. No. 553,290, May 27, 1966, now Patent No. 3,400,118, dated Sept. 3, 1968. This application Apr. 17, 1970, Ser. No. 28,237

Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 **5 Claims**

The gastrointestinal hormone secretin is prepared by fragment condensation. The tetrapeptide L-Thr-L-Phe-L-Thr-L-Ser is coupled to the C-terminal nonadecapeptide of the hormone, and the tetrapeptide L-His-L-Ser-β-benzyl-L-Asp-Gly is coupled to the tricosapeptide resulting from the first coupling.

3,767,640

STREPTOZOTOCIN DERIVATIVES AND PROCESS FOR PREPARING THE SAME

Tetsuo Suami, Tokyo-to, and Tomoya Machinami, Shiraoka-machi, Japan, assignors to Tetsuo Suami

No Drawing. Filed Apr. 19, 1971, Ser. No. 135,476

Claims priority, application Japan, Apr. 25, 1970, 45/35,523

Int. Cl. C07c *47/18*

U.S. Cl. 260—210 R **3 Claims**

Methyl-D-glucosaminide or a salt thereof is condensed with methyl isocyanate to produce methyl N-(N'-methylcarbamoyl)-D-glucosaminide which is then treated with a nitroso compound. Methyl N-(N'-nitrosocarbamoyl)-D-glucosaminide is produced. Optimally, the condensation reaction is carried out in an aqueous solution and at a temperature of 50–150° C. When an acid addition salt of methyl D-glucosaminide is employed the condensation reaction is preferably carried out in the presence of a base and an aqueous solution. When nitrous acid, an alkali salt of nitrous acid or an alkyl nitrite is employed as the nitroso compound the treatment with the nitroso compound is carried out preferably in the presence of an acid and at a temperature of −5 to 10° C. The compounds of the invention exert a tumor inhibitory effect on mice and rats. They are substantially free of diabetogenic side effects.

3,767,641

PROCESS FOR PREPARING ALLYLIC REARRANGEMENT COMPOUNDS OF ANTIBIOTICS SF–837 AND SF–837A_2

Takashi Tsuruoka, Kawasaki, Shunzo Fukatsu and Bunzo Nomiya, Tokyo, and Shigeharu Inoue and Taro Niida, Yokohama, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

No Drawing. Filed Oct. 27, 1971, Ser. No. 193,180

Claims priority, application Japan, Oct. 27, 1970, 45/93,992

Int. Cl. C07c *129/18*

U.S. Cl. 260—210 AB **8 Claims**

The allylic rearrangement products of antibiotics SF–837 and SF–837A_2 are obtained by an acid catalyzed

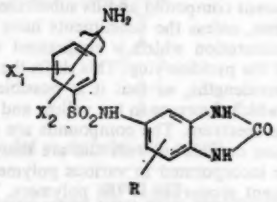
reaction wherein an OH group is shifted from the 9 to the 13 position in aqueous solution.

3,767,642
PREPARATION OF SECONDARY CELLULOSE ACETATE
Kenneth C. Campbell, James Martin Davis, and Robert E. Woods, Jr., Rock Hill, S.C., assignors to Celanese Corporation, New York, N.Y.
No Drawing. Filed June 30, 1971, Ser. No. 158,608
Int. Cl. C08b 3/06
U.S. Cl. 260—227 8 Claims

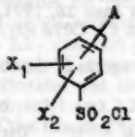
An improved process for the continuous production of secondary cellulose esters, the process involving the steps of fully neutralizing all strong acid catalysts in a fully esterified cellulose dope and then hydrolyzing the dope at temperatures in excess of about 125° C.

3,767,643
5-(AMINOBENZENESULFONYLAMINO)-BENZIMIDAZOLONE
Walter Kunstmann, Neuenhain, Taunus, Joachim Ribka, Offenbach (Main), and Peter Junker, Niederhochstadt, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Sept. 6, 1972, Ser. No. 286,774
Claims priority, application Germany, Sept. 8, 1971, P 21 44 908.1
Int. Cl. C07d 49/38
U.S. Cl. 260—239.9 1 Claim

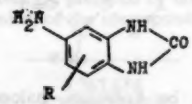
New 5 - (aminobenzenesulfonylamino) - benzimidazolones of the general formula



in which X_1 and X_2 are equal or different and represent a hydrogen atom, a lower alkyl or alkoxy group having 1–4 carbon atoms or a halogen atom, preferably a chlorine or bromine atom, and R represents a hydrogen or halogen atom, preferably, a chlorine or bromine atom, a methyl, ethyl, methoxy or ethoxy group. They may be prepared by reacting benzenesulfochlorides of the general formula



with 5-amino-benzimidazolones of the general formula



in which Formulae A represents a nitro or acetylamino group and X_1, X_2 and R are defined as above, and hydrolysing the acetyl group in the products thus obtained or reducing the nitro group to the amino group.

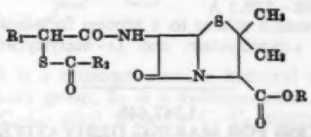
These 5 - (aminobenzenesulfonylamino) - benzimidazolones can be coupled in their diazotized form with N-acetoacetylamino compounds of the benzene-, diphenyl- and benzimidazolone series to mono and disazo pigments which are distinguished by excellent properties of fastness and very pure and brilliant shades.

3,767,644
PROCESS FOR THE PREPARATION OF N-ALKYL SUBSTITUTED LACTAMS
Yohei Fukuoka and Katsuyoshi Sasaki, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka City, Osaka, Japan
No Drawing. Filed Dec. 27, 1971, Ser. No. 212,622
Claims priority, application Japan, Dec. 30, 1970, 46/123,095
Int. Cl. C07d 41/06
U.S. Cl. 260—239.3 A 6 Claims

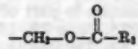
An improved process for the preperation of N-alkyl substituted lactams useful as solvents by heating a cyanhydrin represented by the formula $HO(CH_2)_nCN$ wherein n is an integer of 3 to 5 inclusive together with an alcohol represented by the formula ROH wherein R represents an alkyl group having 1 to 4 carbon atoms at a temperature of 250° C. to 400° C. under pressure. The present process gives an improved yield of the desired product at a low cost as compared with the prior art process. The process can be advantageously modified. One modification consists in the process in which the reaction is conducted in the process of a specific catalyst. Another modification consists in the process in which as least a part of the by-products are recycled in the reaction system. Still another modification consists in the process in which the reaction is conducted in the presence of water, the water being added at the time of initiation of the reaction. Such modifications give a further improved yield of the desired product.

3,767,645
ACYLTHIOACETYL PENICILLINS
Uwe Treuner, Regensburg, and Hermann Breuer, Burgweinting, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.
No Drawing. Filed Sept. 14, 1971, Ser. No. 180,494
Int. Cl. C07d 99/16
U.S. Cl. 260—239.1 9 Claims

Acylthioacetylpenicillins of the general formula



wherein R is hydrogen, lower alkyl, aralkyl, tri(lower alkyl)silyl, a salt forming ion or the group



R_1 is hydrogen, lower alkyl, cycloalkyl, aralkyl, aryl or certain heterocyclic groups; R_2 is lower alkyl, cycloalkyl, aryl or certain heterocyclic groups; and R_3 is lower alkyl, aryl or aralkyl, are useful as antibacterial agents.

3,767,646
6-(3-ARYL-1,2,4-OXADIAZOLE-5-ONE-4-ACETAMIDO)PENICILLANIC ACIDS
Charles Truman Holdrege, Camillus, N.Y., assignor to Bristol-Myers Company, New York, N.Y.
No Drawing. Original appplication June 29, 1970, Ser. No. 50,997, now Patent No. 3,669,958. Divided and this application Nov. 29, 1971, Ser. No. 203,042
Int. Cl. C07d 99/16
U.S. Cl. 260—239.1 6 Claims

6-[N - (substituted - imidoyl)aminoacetamido]penicillanic acids and their salts are valuable as antibacterial agents, nutritional supplements in animal feeds, therapeutic agents in poultry and animals, including man, and are especially useful in the treatment of infectious diseases caused by Gram-positive and certain Gram-negative bacteria, most particularly those caused by the Proteus genus. 6-[N - phenylacetimidoyl) - aminoacetamido]penicillanic

acid, a preferred embodiment of the invention, is prepared by Raney nickel hydrogenation (50 p.s.i., R.T.) of aqueous solution of sodium 6-(3-benzyl-1,2,4-oxadiazole-5-one-4-acetamido)penicillanate which is prepared in turn by reaction of 6-aminopenicillanic acid with 3-benzyl-1,2,4-oxadiazole-5-one-4-acetyl chloride.

3,767,647
PROCESS FOR PRODUCING OMEGA-LAUROLACTAM

Toshiro Hirose and Takashi Matsubara, Nagoya, Japan, assignors to Toagosei Chemical Industry Co., Ltd., Minato-ku, Tokyo, Japan

No Drawing. Filed Jan. 11, 1971, Ser. No. 105,669
Claims priority, application Japan, Jan. 19, 1970, 45/4,406
Int. Cl. C07d *41/00*
U.S. Cl. 260—239.3 A **4 Claims**

A high purity ω-laurolactam is prepared from a crude cyclododecanone oxime containing 5% by weight or less of cyclododecanone by subjecting the oxime to the Beckmann rearrangement reaction in the presence of sulfuric acid having a concentration of 98% by weight or more or fuming sulfuric acid containing 20% by weight or less of sulfuric-anhydride, separating the thus formed ω-laurolactam from the reaction mixture, dissolving the resulting ω-laurolactam in a liquid aromatic hydrocarbon, washing the solution with an alkali solution at a temperature of 60° to 120° C., and recovering ω-laurolactam.

3,767,648
PRODUCTION OF ε-CAPROLACTAM AND O-ACETYLCYCLOHEXANE OXIME

Isamu Fujita, Ikeda, Hisashi Tani, Higashiosaka, and Shinichi Deguchi, Settsu, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha

No Drawing. Filed Dec. 1, 1971, Ser. No. 203,824
Claims priority, application Japan, Dec. 22, 1970, 45/124,261
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 A **2 Claims**

This invention relates to a process for simultaneously producing ε-caprolactam and O-acetylcyclohexanone-oxime.

3,767,649
PROCESS FOR MAKING DERIVATIVES OF LINCOMYCIN AND ITS ANALOGS

Brian Bannister, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 158,075, June 29, 1971. This application Nov. 15, 1971, Ser. No. 199,046
Int. Cl. C08b *19/00*
U.S. Cl. 260—210 R **13 Claims**

Alkyl 7-deoxy-7-RS-α-thiolincosaminides useful as intermediates for preparing antibacterially active 7-deoxy-7-RS-lincomycins are prepared by heating alkyl N-acyl-6,7 - aziridino - 6 - deamino-7-deoxy-α-thiolincosaminides with a non-aromatic, cyclic monosulfide in the presence of glacial acetic acid or other anhydrous lower-alkanoic acid, or anhydrous benzoic acid or other anhydrous arenoic acids of not more than 12 carbon atoms.

3,767,650
3-AMINO-2-ARYL-ACROLEINS

Goetz E. Hardtmann, Florham Park, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 27,460, Apr. 10, 1970. This application Nov. 9, 1970, Ser. No. 88,221
Int. Cl. C07c *95/08*
U.S. Cl. 260—240 D **6 Claims**

The present invention discloses compounds of the class of 3-amino-2-aryl-acroleins, e.g. 3-dimethylamino-2-(3,4-dimethoxyphenyl)-acrolein. The compounds are useful as pharmaceutical agents, e.g. as anti-inflammatory agents, and may be prepared by reacting an arylacetic acid with an appropriately disubstituted formamide by the Vilsmeier reaction.

3,767,651
NOVEL CYANINE DYES DERIVED FROM 1,2-DIPHENYLINDOLES

Derek D. Chapman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application July 22, 1968, Ser. No. 746,259, now Patent No. 3,598,596, dated Aug. 10, 1971. Divided and this application Mar. 22, 1971, Ser. No. 126,876
Int. Cl. C09b *23/06, 23/10*
U.S. Cl. 260—240 E **7 Claims**

Novel cyanine dyes are provided which feature a 1,2-diarylindole nucleus. Light sensitive silver halide emulsions containing these dyes are also provided.

3,767,652
2,2'-BIS(3-PYRIDINOLS)

Joseph G. Wirth, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Original application Jan. 7, 1970, Ser. No. 1,318, now Patent No. 3,676,448. Divided and this appplication Nov. 23, 1971, Ser. No. 201,549
Int. Cl. C07d *23/00*
U.S. Cl. 260—240 D **8 Claims**

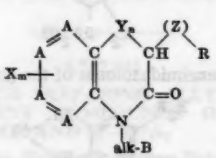
The novel compounds, 2,2'-bis(3-pyridinols), will fluoresce in the visible spectrum when exposed to ultraviolet light. The particular color emitted is dependent upon the other substituents on the pyridine ring. Generally, the parent compound and its substituted derivatives fluoresce green, unless the substituents have aromatic or aliphatic unsaturation which is conjugated with the unsaturation of the pyridine ring. This shifts the fluorescence to longer wavelengths, so that it is possible to produce compounds which fluoresce in the yellow and red portions of the visible spectrum. The compounds are readily soluble in common organic solvents and are thermally stable. They can be incorporated in various polymers to impart their fluorescent properties to the polymers. They can be incorporated in lacquers to produce films or applied as coatings on the envelope of ultraviolet lamps to produce various colored lights when energized.

3,767,653
THIAZINES

John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed June 28, 1971, Ser. No. 157,678
Int. Cl. C07d *93/12*
U.S. Cl. 260—243 R **12 Claims**

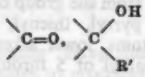
Anti-inflammatory agents of the formula



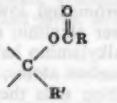
(II)

wherein X may be hydrogen, halogen, alkyl, haloalkyl, haloalkoxy, haloalkylthio, alkoxy, hydroxy, alkylthio, nitro, alkylsulfonyl, amino, alkanoylamino or mono- or dialkylamino wherein any of the foregoing alkyl or substituted alkyl radicals contain up to 8 carbon atoms; *m* may be 0, 1, 2, 3 or 4; each A may be carbon, but one A may be nitrogen in any position provided *n* is 1; Y may be sulfur, sulfoxide, sulfonyl, or oxygen; *n* may be 0 to 1; R may be a straight or branched alkyl of up to 8 carbon atoms cycloalkyl of from 3 to 8 carbon atoms, phenyl X-substituted phenyl, pyridyl, thienyl, furyl, naphthyl, alkyl-

phenyl or alkenylphenyl wherein the alkyl or alkenyl radical may contain up to 4 carbon atoms either straight chain or branched; Z may be



wherein R' is hydrogen, vinyl, allyl or R, or



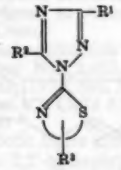
alk may be a straight or branched carbon chain of up to 6 carbon atoms; and B may be a basic nitrogen-containing radical; and pharmaceutically acceptable acid-addition salts thereof; N oxides and pharmaceutically acceptable acid-addition salts thereof, and quaternary ammonium salts thereof.

3,767,654
THIAZINE- AND THIAZOLE-TRIAZOLES

Rudiger D. Haugwitz, Highland Park, and Venkatachala L. Narayanan, Hightstown, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Sept. 7, 1971, Ser. No. 178,494
Int. Cl. C07d *93/06*
U.S. Cl. 260—243 R **7 Claims**

Triazole derivatives are provided having the structure



which are useful as anthelmintic agents.

3,767,655
INTERMEDIATES FOR THE PRODUCTION OF CEPHALOSPORIN COMPOUNDS

Lee C. Cheney and William J. Gottstein, Fayetteville, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Sept. 30, 1971, Ser. No. 185,384
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **11 Claims**

Cephalosporins having a 7-α-aminoarylacetamido substituent and a nucleophile on the 3-methyl group are prepared by reaction of the nucleophile with the new intermediates, 7 - (D - 2,2 - dimethyl - 3 - nitroso - 5 - oxo-4-aryl - 1 - imidazolidinyl - 3 - bromomethyl - 3 - cephem-4-carboxylic acid sulfoxides and their easily hydrolyzed esters such as trimethylsilyl and 2,2,2-trichloroethyl, followed by removal of the blocking groups, as by hydrogen chloride in dioxane or glacial acetic acid. The intermediates themselves are prepared by bromination, as with N-bromosuccinimide, of the corresponding 3-methyl compounds.

3,767,656
s-TRIAZINES

Julius Diamond, Lafayette Hill, and George H. Douglas, Paoli, Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

No Drawing. Filed Oct. 14, 1971, Ser. No. 189,191
Int. Cl. C07d *55/20*
U.S. Cl. 260—249.9 **49 Claims**

Novel 4-anilino-2-amino-1,3,5-triazines, processes for preparing the same and their method of treatment of hypertension as medicinal agents are described. The compounds of this invention possess utility as diuretics and treatment of hypertension and related pathological disorders. They are also useful in the treating of hyperacidity and ulceration.

3,767,657
PROCESS FOR THE PREPARATION OF QUINOXALINE-DI-N-OXIDES

Robert L. Robertson, Waterford, and Robert V. Kasubick, Gales Ferry, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Filed Mar. 31, 1971, Ser. No. 129,979
Int. Cl. C07d *51/78*
U.S. Cl. 260—250 R **5 Claims**

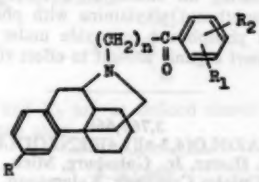
Improved synthesis of esters of 2-quinoxalinecarboxylic acid-1,4-dioxides through a condensation of a benzofuroxan and β-ketoester in the presence of a catalytic amount of calcium hydroxide, at a temperature of 40–80° C.

3,767,658
N-BENZOYLALKYLMORPHINAN DERIVATIVES AND SALTS THEREOF

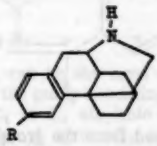
Toshio Atsumi, Kenji Kobayashi, and Yoshiaki Takebayashi, Takarazuka, and Hisao Yamamoto, Nishinomiya, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed Jan. 25, 1971, Ser. No. 109,610
Claims priority, application Japan, Feb. 3, 1970, 45/9,687, 45/9,689
Int. Cl. C07d *43/28*
U.S. Cl. 260—285 **10 Claims**

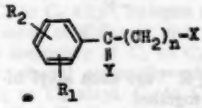
Morphinan derivatives of the formula,



wherein R is a hydrogen atom, a hydroxyl group or a C_1–C_3 alkoxy group; R_1 is a hydrogen atom, a halogen atom, a C_1–C_3 alkyl group, a C_1–C_3 alkoxy group, a C_1–C_3 alkylthio group, a nitro group, a trifluoromethyl group, an amino group or a hydroxyl group; R_2 is a hydrogen atom, a C_1–C_3 alkyl group, a halogen atom or a C_1–C_3 alkoxy group; and n is an integer of 2 to 4, which are useful as non-addicted analgesics and pain-relieving agents with calming effects. These morphinan derivatives are prepared by reacting a morphinan derivative of the formula,

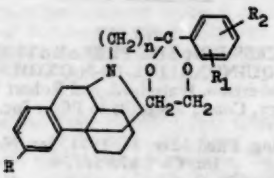


wherein R is as defined above, with a halogen derivative of the formula,



wherein R_1, R_2 and n are as defined above; X is a halogen atom; and Y is an oxygen atom or an ethylenedioxy

group, and further, in the case of Y=ethylenedioxy group, by hydrolyzing the resulting ethylenedioxy derivative of the formula,



wherein R, R_1, R_2 and *n* are as defined above.

3,767,659

DERIVATIVES OF 3,4-DIHYDROBENZOTHIENO [2,3-C]PYRIDINE

John T. Suh, Mequon, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 621,421, Mar. 8, 1967, now abandoned, and Ser. No. 710,633, Mar. 5, 1968, now Patent No. 3,628,068. This application Nov. 11, 1971, Ser. No. 197,963

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 B **5 Claims**

The compounds are 1-substituted - 3,4 - dihydrobenzothieno[2,3-C]pyridines and 1-substituted - 3,4 - dihydro-5H - benzothieno[2,3-C]azepines which in the form of pharmaceutical compositions are useful as antihypertensive and antipsychotic agents. They are preferably prepared by treating an amide of a corresponding β or γ-(3 - thianaphthenyl)alkylamine with phosphorus oxychloride and phosphorus pentoxide under reflux conditions in an inert organic solvent to effect ring closure.

3,767,660

4H-s-TRIAZOLO[4,3-a][1,4]BENZODIAZEPINES

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

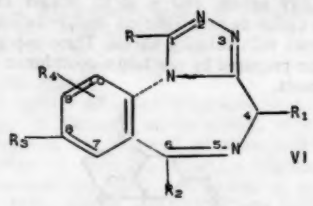
No Drawing. Filed Sept. 13, 1971, Ser. No. 180,210

The portion of the term of the patent subsequent to Jan. 9, 1990, has been disclaimed

Int. Cl. C07d *99/02*

U.S. Cl. 260—294.9 **5 Claims**

This invention relates to novel substituted 4H-s-triazolo-[4,3-a][1,4]benzodiazepines embraced by the formula



wherein R is selected from the group consisting of chlorine, bromine, cyano, OR′ wherein R′ is alkyl of 1 through 3 carbon atoms and

wherein R″ and R‴ are each alkyl of 1 through 3 carbon atoms and together

is selected from the group consisting of pyrrolidino, piperidino and morpholino; R_1 is selecte dfrom the group consisting of hydrogen and alkyl of 1 through 3 carbon atoms; R_2 is selected from the group consisting of pyridyl, 2-pyrimidyl, furyl, pyrryl, thienyl, lower alkyl of 1 through 3 carbon atoms, lower alkenyl of 2 through 3 carbon atoms, cycloalkyl of 5 through 7 carbon atoms and cycloalkenyl of 5 through 7 carbon atoms; R_3 and R_4 are selected from the group consisting of hydrogen, halogen, nitro, trifluoromethyl, lower alkoxy of 1 through 3 carbon atoms, lower alkylthio of 1 through 3 carbon atoms and lower dialkylamino having lower alkyl moieties of 1 through 3 carbon atoms; and pharmacologically acceptable acid addition salts thereof. It also relates to processes for their preparation. The new products of Formula VI are useful as sedatives, hypnotics, anticonvulsants, tranquilizers and muscle relaxants in mammals and birds, and as feed additives for livestock and poultry.

3,767,661

4H-s-TRIAZOLO[4,3-a][1,4]BENZODIAZEPINES

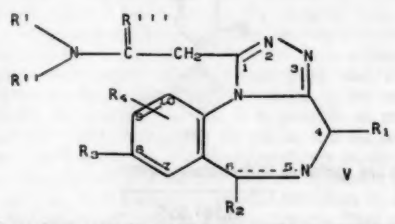
Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,111

Int. Cl. C07d *99/02*

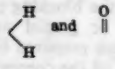
U.S. Cl. 260—295 T **3 Claims**

This invention relates to a novel substituted 4H-s-triazolo[4,3-a][1,4]benzodiazepines embraced by the formula



wherein R′ and R″ are selected from the group consisting of hydrogen and alkyl of 1 through 3 carbon atoms, and together

is selected from the group consisting of pyrrolidino, piperidino, hexamethyleneimino and morpholino; R‴ is selected from the group consisting of



R_1 is selected from the group consisting of hydrogen and alkyl of 1 through 3 carbon atoms; R_2 is selected from the group consisting of pyridyl, 2-pyrimidyl, furyl, pyrryl, thienyl, lower alkyl of 1 through 3 carbon atoms, lower alkenyl of 2 through 3 carbon atoms, cycloalkyl of 5 through 7 carbon atoms and cycloalkenyl of 5 through 7 carbon atoms; R_3 and R_4 are selected from the group consisting of hydrogen, halogen, nitro, trifluoromethyl, lower alkoxy of 1 through 3 carbon atoms, lower alkylthio of 1 through 3 carbon atoms and lower dialkylamino having lower alkyl moieties of 1 through 3 carbon atoms: the 5(6)-nitrogen-carbon linkage denoted by the broken line is selected from the group consisting of single bonds

and double bonds, with the proviso that the linkage is always a double bond whenever R''' is

and pharmacologically acceptable acid addition salts thereof. It also relates to processes for their preparation. The new products of Formula V are useful as sedatives, hypnotics, anticonvulsants, tranquilizers and muscle relaxants in mammals and birds, and as feed additives for livestock and poultry.

3,767,662

CERTAIN 1,3-THIAZOLIDIN-4-ONES

Ian Trevor Kay, Wokingham, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Aug. 9, 1971, Ser. No. 170,367
Claims priority, application Great Britain, Aug. 17, 1970, 39,484/70
Int. Cl. C07d *91/16*
U.S. Cl. 260—306.7 3 Claims

Certain 5-carbamoyl oxides of thiazolidin-4-one compounds, their synthesis, and their use as insecticides and arachnidicides.

3,767,663

BIS OXAZOLES AS BRIGHTENERS FOR FIBERS AND PLASTICS

Henry Xavier Kaempfen, Hillsboro Township, Somerset County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application May 4, 1970, Ser. No. 34,516, now Patent No. 3,653,943. Divided and this application Sept. 15, 1971, Ser. No. 180,924
Int. Cl. C07d *85/00*
U.S. Cl. 260—307 D 2 Claims

Natural and synthetic fibers and plastics are brightened by applying thereto 2,2'-bisnaphthoxazolyl and 2-(benzoxazol-2-yl)naphthoxazole compounds. Fibers brightened include cellulose, polyamide and polyester. Plastics brightened include polyvinyl chloride, polyethylene and polyester.

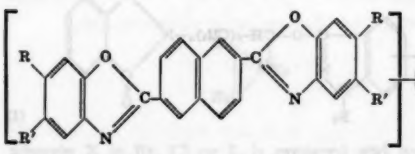
3,767,664

BIS-BENZOXAZOLYL-NAPHTHALENES AS OPTICAL BRIGHTENERS

Kurt Weber, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Original application Feb. 28, 1968, Ser. No. 708,798, now abandoned. Divided and this application Sept. 22, 1971, Ser. No. 182,869
Claims priority, application Switzerland, Mar. 7, 1967, 3,283/67
Int. Cl. C07d *85/48*
U.S. Cl. 260—307 D 2 Claims

A process for optically brightening organic materials is provided which is characterized by the use of specific bis-benzoxazolyl-naphthalenes, which correspond to the formula



In this formula R represents a phenyl or methyl group, R' stands for hydrogen or the methyl group, or one of the residues R, R' for a carboxylic acid alkyl ester group or a methoxy group, M represents a hydrogen ion, alkali metal ion, ammonium or amine ion, and m=0, 1 or 2.

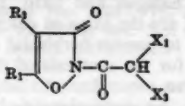
3,767,665

ISOXAZOLINONE COMPOUNDS, PROCESS FOR THE PREPARATION THEREOF AND THEIR USE AS AGRICULTURAL CHEMICALS

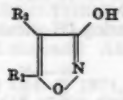
Kazuo Tomita, Tokyo, and Yukiyoshi Takahi, Shiga-ken, Yasu-machi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

No Drawing. Filed Nov. 19, 1971, Ser. No. 200,501
Claims priority, application Japan, Nov. 27, 1970, 45/104,677
Int. Cl. C07d *85/18*
U.S. Cl. 260—307 A 10 Claims

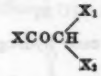
Isoxazolinone compounds have the formula



wherein R_1 represents a lower alkyl group or phenyl group, R_2 represents hydrogen atom, a halogen atom or a lower alkyl group, X_1 represents a halogen atom and X_2 represents hydrogen atom or a halogen atom. These compounds are useful as an agricultural bactericidal and fungicidal agent and prepared by reacting the 3-hydroxyisoxazole derivative having the formula



wherein R_1 and R_2 are as defined above with the acid halide having the formula



wherein X_1 and X_2 are as defined above and X represents a halogen atom.

3,767,666

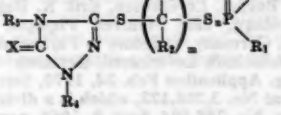
3-MERCAPTO-1,2,4-TRIAZOL-2-INE-5(THI)ONE CONTAINING THIOPHOSPHATES

James Zielinski, Kenilworth, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

No Drawing. Filed July 17, 1970, Ser. No. 55,987
Int. Cl. A01n *9/36*; C07f *9/16*
U.S. Cl. 260—308 C 7 Claims

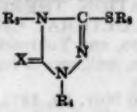
Compounds represented by the following generic formula:

(A)



wherein R and R_1 can be the same or different and are each selected from the group consisting of C_1 to C_6 alkoxy, C_1 to C_6 alkyl, C_1 to C_6 alkylthio (branched and unbranched), and phenyl optionally substituted by C_1 to C_6 alkyl, halogen and nitro; R_2 and R_3 can be the same or different and each is selected from the group consisting of hydrogen, C_1 to C_6 alkyl (branched or unbranched), C_1 to C_6 alkylthio, C_1 to C_6 alkoxy and phenyl optionally substituted by C_1 to C_6 alkyl, halogen and nitro; R_4 and R_5 can be the same or different and are each selected from the group consisting of C_1 to C_6 alkyl (branched or unbranched), phenyl optionally substituted by halogen, nitro or C_1 to C_6 alkyl, C_2 to C_6 alkyl thioalkyl, C_2 to C_6 alkoxyalkyl, C_1–C_6 mono- and C_2–C_6 dialkyl or C_3–C_6 cycloalkyl amino, C_1 to C_6 alkoxy; m=0–4, n=0 and 1 subject to the condition that when m=0, n=0; Y is either O or S and X is either O or S, have been shown

to possess insecticidal activity. Compounds represented by the following structural formula:

(B) 

wherein R_6 is one selected from the group consisting of H (except when R_5 is dimethylamino and X is S) C_2 to C_6 alkoxyalkyl, C_1 to C_6 alkyl (branched and unbranched), haloalkyl, phenyl optionally substituted by C_1 to C_6 alkyl, halogen and nitro, and haloalkyl and R_4 and R_5 and X are the same as described hereinabove, have been found to possess herbicidal activity as well as being precursors for the synthesis of the compounds described hereinabove.

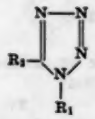
3,767,667

PROCESS FOR PREPARING 1H-TETRAZOLE COMPOUNDS

Takashi Kamiya and Yoshihisa Saito, Suita, Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

No Drawing. Filed Oct. 7, 1971, Ser. No. 187,561
Int. Cl. C07d *55/56*
U.S. Cl. 260—308 D **7 Claims**

A process for preparing 1H-tetrazole compounds of the formula:



wherein R_1 and R_2 are each hydrogen or a possible substituent,

which comprises reacting an amine compound of the formula:

$$R_1—NH_2$$

wherein R_1 is as defined above,

or its salt with an orthocarboxylic acid ester of the formula:

$$R_2C(OR_3)_3$$

wherein R_3 is lower alkyl and R_2 is as defined above, and a hydrazoic acid salt.

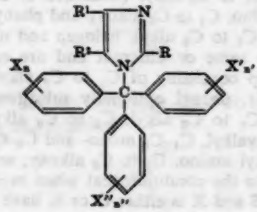
3,767,668

PROCESS FOR THE PRODUCTION OF N-TRITYL-IMIDAZOLES

Karl-Heinz Buchel, Leverkusen, Erik K. Regel, Wuppertal-Kronenberg, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Application Feb. 24, 1970, Ser. No. 13,797, now Patent No. 3,705,172, which is a division of application Ser. No. 758,594, Sept. 9, 1968, now Patent No. 3,660,577. Divided and this application Jan. 17, 1972, Ser. No. 218,519
Claims priority, application Germany, Sept. 15, 1967, F 53,504
Int. Cl. C07d *49/00*
U.S. Cl. 260—309 **3 Claims**

N-trityl-imidazoles and salts thereof of the formula:

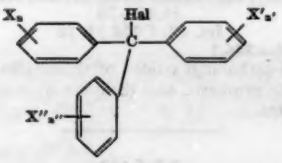


wherein

R, R^1 and R^2 are hydrogen, lower alkyl or phenyl, or R^1 and R^2 together form an anellated benzene ring,
X, X′ and X″ are alkyl of 1 to 12 carbon atoms or an electro-negative moiety, and
n, *n*′ and *n*″ are an integer from 0 to 2,

or pharmaceutically acceptable acid salts thereof may be produced by reacting a silver salt or alkali metal salt of an imidazole of the formula:

with a trityl halide of the formula:



wherein the substituents are as above defined and Hal is halogen. These compounds are useful as antimycotics.

3,767,669

PHENYL-SUBSTITUTED HYDROXYALKYL DERIVATIVES OF GLYCOLURILS

Chempolil T. Mathew, Dover, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed June 18, 1971, Ser. No. 154,694
Int. Cl. C07d *49/30*
U.S. Cl. 260—309.7 **7 Claims**

Phenyl-substituted oxyalkylated derivatives of glycolurils are prepared by reaction of glycolurils with 1 to 3 mols of styrene oxide per mol of glycoluril in the presence of a suitable catalyst. These compounds are useful lubricants and intermediates to prepare polyurethanes, polyesters, alkyd resins and surface active agents.

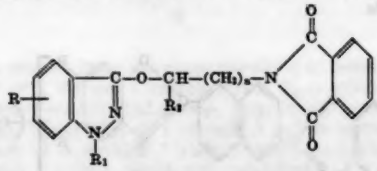
3,767,670

1-R_1-3-(3-PHTHALIMIDO-ALKYLOXY)-5-OR-6-R-1H-INDAZOLE COMPOUNDS

Ctirad Podesva, Montreal, Quebec, and William T. Scott, Ville-de-Lery, Quebec, Canada, assignors to Delmar Chemicals Limited, Ville La Salle, Quebec, Canada

No Drawing. Filed Nov. 30, 1971, Ser. No. 203,456
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 C **8 Claims**

This invention provides phthalimido compounds of the following general formula:



(I)

wherein R represents a hydrogen or halogen atom; R_1 represents an alkyl group, a substituted or unsubstituted aryl group or a substituted or unsubstituted aralkyl group; R_2 represents a hydrogen atom or an alkyl group and *n* is an integer no greater than 6 and processes for making them. Such compounds are useful in making a novel class

of primary and secondary amino-indazole compounds which are themselves biologically active as well as being readily convertable into a known class of tertiary amino-indazole compounds of established utility in chemotherapy.

3,767,671

TRIMELLITIMIDE DERIVATIVES

Johann F. Klebe, Henry A. Wroblewski, and Alfred R. Gilbert, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Filed Sept. 1, 1971, Ser. No. 177,099

Int. Cl. C07d *27/52*

U.S. Cl. 260—326 N **2 Claims**

Trimellitimide can be made by heating a mixture of trimellitic anhydride and an ammonium compound such as ammonium carbonate resulting in the evolution of carbon dioxide and water. The trimellitimide can thereafter be contacted with formaldehyde and an alkali hydroxide to convert it to the alkali metal salt of the corresponding hydroxymethyl derivative. By treating the aforementioned alkali metal salt with an acidic aqueous solution, it can be converted to N-hydroxymethyl trimellitimide, which can be used to make the halomethyl and corresponding ether derivatives. The compounds produced by the aforedescribed methods can be used as sizing agents for glass fibers and cellulosic materials to improve the shear modulus of composites made from such treated fibers and organic matrix materials, such as epoxy resins.

3,767,672

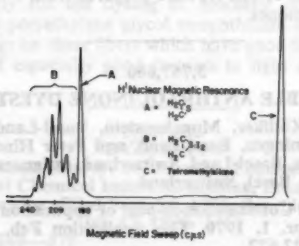
HALOGEN ADDUCT OF ETHYLENE SULFIDE

Jose L. Villa, Heightstown, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.

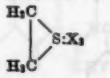
Original application May 27, 1970, Ser. No. 40,949, now Patent No. 3,582,521. Divided and this application Feb. 16, 1971, Ser. No. 115,739

Int. Cl. C07d *59/00*

U.S. Cl. 260—327 E **4 Claims**



A novel halogen adduct of ethylene sulfide,



wherein X is Br, Cl or I, is prepared and used as an oxidation stabilizer in a stabilizer system for an ethylene sulfide polymer to prevent the oxidation degradation of the polymer, particularly during processing. In a preferred process the oxidation stabilizer in the system is formed in situ in the polymer by polymerizing ethylene sulfide in the presence of from about 0.04 to 4% of Br_2, Cl_2 or I_2. A thermal stabilizer is added also to the polymer before high temperature processing to prevent thermal degradation.

3,767,673

INTERMEDIATES TO SUBSTITUTED DIBENZ[a,h] AZULENONES AND 8-(OXA OR THIA) SUBSTITUTED DIBENZ[a,h]AZULENONES

William J. Houlihan, Mountain Lakes, and Jeffrey Nadelson, Parsippany, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Original application May 14, 1970, Ser. No. 37,342, now Patent No. 3,687,975. Divided and this application June 12, 1972, Ser. No. 262,065

Int. Cl. C07d *59/00*

U.S. Cl. 260—327 B **1 Claim**

Substituted dibenz[a,h]azulenones and 8-(oxa or thia) substituted dibenz[a,h]azulenones, e.g., 6,7-dihydro-benz-[b]indeno[1,2-d]thiepin-8(8H)-one, prepared by treating a substituted spiro[1-benzoxa or thia-5(4H)-1′-isobenzofuran]-3′-one with concentrated mineral acid. The compounds are useful as anti-depressants.

3,767,674

CYCLOHEXENO-THIOXANTHONES

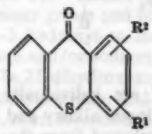
Ibrahim Mohamed Nabih, Zamalek, Cairo, Egypt, assignor to Ostra Lakemedel Aktiebolag, Sodertalje, Sweden

No Drawing. Filed Oct. 1, 1971, Ser. No. 185,862

Int. Cl. A61k *27/00*; C07d *65/18*

U.S. Cl. 260—328 **3 Claims**

Compounds, useful as schistosomicidal and carcinostatic agents of the thiaxanthone type having the general formula



(I)

and a pharmaceutically acceptable salt thereof, wherein R^1 is the group

and R^2 is a cyclohexyl residue fused to the thiaxanthone molecule. Also pharmaceutical preparations containing one or more of these compounds and the use of these compounds as carcinostatic agents and in the treatment of schistosomiasis.

3,767,675

BASIC THIENYLALKANES

Klaus Posseli, Bergen-Enkheim, and Heribert Offermanns, Grossauheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

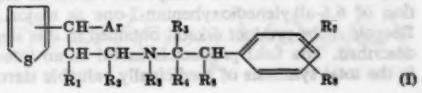
No Drawing. Filed Sept. 20, 1971, Ser. No. 182,192

Claims priority, application Austria, Oct. 14, 1970, A 9,277/70

Int. Cl. A61k *27/00*; C07d *63/12*

U.S. Cl. 260—332.3 R **9 Claims**

Compounds are prepared having the formula



(I)

where the thienyl group can be substituted by one or more lower alkyl groups, Ar is a thienyl or phenyl group which can be substituted by one or more lower alkyl or lower alkoxy groups, R_1, R_2, R_3, R_4 and R_5 are hydrogen or lower alkyl, R_6 is hydrogen or hydroxyl and R_7 and R_8 are the same or different and are hydrogen, hydroxyl, halogen, lower alkyl, lower haloalkyl or lower alkoxy and their salts. The compounds can exist in optically active and diastereomeric form or a racemic mixture. They are useful in heart and circulatory illnesses.

3,767,676

BENZAZEPINES

Lucien Nedelec, Le Raincy, Jacques Guillaume, Aulnay-sous-Bois, and André Allais, Les Lilas, France, assignors to Roussel-UCLAF, Paris, France

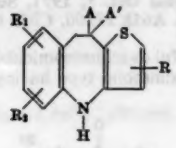
No Drawing. Filed Feb. 28, 1972, Ser. No. 230,123

Claims priority, application France, Mar. 1, 1971, 7106916

Int. Cl. A61k *27/00*; C07d *63/18*

U.S. Cl. 260—332.3 P 9 Claims

Novel 9,10-dihydro-[4H]-thieno-[3,2-b] [f]-benzazepines of the formula



(I)

wherein A and A' are individually selected from the group consisting of lower alkoxy and lower alkylthio and taken together are selected from the group consisting of lower alkylenedioxy, lower alkylenedithio and thiolower-alkyleneoxy, R is selected from the group consisting of hydrogen and lower alkyl and R_1 and R_2 are individually selected from the group consisting of hydrogen, halogen, $—CF_3$, optionally substituted lower alkoxy, lower alkylthio, optionally substituted sulfonamido, diloweralkylamino and acylamino where the acyl is derived from an organic carboxylic acid of 1 to 18 carbon atoms which are intermediates for 4-(alkylaminoalkyl)-[4H]-thieno-[3,2-b] [f]-benzazepines having antidepressant activity and the process for their preparation and novel intermediates.

3,767,677

PROCESS FOR THE PREPARATION OF 6,6-ALKYLENEDIOXYHEPTAN-2-ONE

Pius Anton Wehrli, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed July 8, 1970, Ser. No. 53,281

Int. Cl. C07d *13/04*

U.S. Cl. 260—340.9 3 Claims

A two-step process for the preparation of 6,6-alkylenedioxyheptan-2-one starting from diketene and formaldehyde is described. In the first step diketene and formaldehyde are reacted to form 2,6-heptanedione. Selective ketalization of the latter compound results in the formation of 6,6-alkylenedioxyheptan-2-one as major product. Recycle of by-product diketal obtained in this step is also described. The final product is useful as an intermediate in the total synthesis of medicinally valuable steroids.

3,767,678

HYDROXYCITRIC ACID DERIVATIVES

Robert William Guthrie, Fairfield, and Richard Wightman Kierstead, North Caldwell, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Dec. 2, 1971, Ser. No. 204,288

Int. Cl. C07d *5/40*

U.S. Cl. 260—343.6 3 Claims

Ester and amide derivatives of threo-hydroxycitric acid γ-lactone inhibit fatty acid synthesis in biological systems and are useful in the treatment of obesity and in correcting conditions of lipid abnormalities.

3,767,679

3-SUBSTITUTED CHROMONES

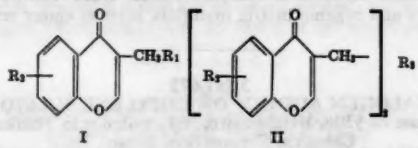
Maximillian von Strandtmann, Rockaway, Sylvester Klutchko, Hackettstown, and John Shavel, Jr., Mendham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,073

Int. Cl. C07d *7/34*

U.S. Cl. 260—345.2 12 Claims

3-substituted chromones having the following structural formulas are disclosed.



I II

wherein R_1 is halogen, cyano, carboxy, carboxamido, amino, alkylamino, arylamino, alkoxy, N-alkylhydroxylamino, acyloxy, amido and imido; R_2 is hydrogen, halogen, lower alkoxy; and R_3 is amino, alkylenediamino such as ethylenediamino, etc., cyclic diamino such as piperazine-1,4-diyl,hydroxylamino, —O— or —S—. They are useful in preventing allergic manifestations.

Compounds of this type are prepared from 3-(hydroxymethyl)chromones.

3,767,680

DISPERSIBLE ANTHRAQUINONE DYESTUFFS

Hans-Peter Kölliker, Munchenstein, Basel-Land, Alfred Staub, Binningen, Basel-Land, and Peter Hindermann, Bottmingen, Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

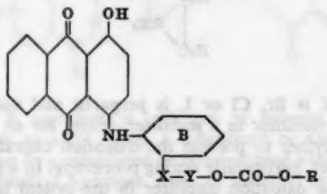
No Drawing. Continuation-in-part of application Ser. No. 24,809, Apr. 1, 1970. This application Feb. 1, 1972, Ser. No. 222,672

Claims priority, application Switzerland, Apr. 2, 1969, 5,025/69

Int. Cl. C09b *1/50, 1/56*

U.S. Cl. 260—372 3 Claims

Dyestuffs of the disperse series of the formula



wherein X is $—SO_2—NH—$, $—SO_2—O—$, $—SO_2—$ and —S—, R is C_1–C_5-alkyl, cyclohexyl, phenyl or phenyl

substituted by chlorine, bromine, C_1–C_4-alkyl or C_1–C_4-alkoxy, Y is C_1–C_4-alkylene, $—CH_2CH_2—O—CH_2CH_2—$, or $—CH_2CH_2CH_2—O—CH_2CH_2CH_2—$ and B may be substituted by chlorine, bromine, C_1–C_2-alkyl or C_1–C_2-alkoxy. The dyestuffs are suited for dying synthetic organic fibers, especially polyester fibers, in fast blue shades of good fastness.

3,767,681

DISPERSIBLE ANTHRAQUINONE DYESTUFFS

Hans-Peter Kölliker, Muenchenstein, Alfred Staub, Binningen, and Peter Hindermann, Bottmingen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

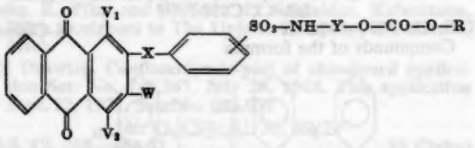
No Drawing. Continuation-in-part of application Ser. No. 24,810, Apr. 1, 1970, now Patent No. 3,689,510. This application Jan. 21, 1972, Ser. No. 219,852

Claims priority, application Switzerland, Apr. 2, 1969, 5,026/69

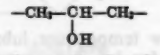
Int. Cl. C09b *1/22, 1/56*

U.S. Cl. 260—372 **4 Claims**

Difficultly water-soluble anthraquinone dyestuffs, free from water-solubilizing groups which dissociate acid in water of the formula



wherein V_1 represents hydroxyl or $—NH_2$, V_2 represents hydrogen, hydroxyl, $—NH_2$, lower alkylamino, cyclohexylamino, phenylamino, phenoxyphenylamino, phenylazophenylamino or phenylamino ring-substituted by chlorine, lower alkyl or lower alkoxy, X is oxygen or sulfur, Y is C_1–C_4-alkylene or



W is hydrogen, chlorine or X-phenylene

$$—SO_2—NH—Y—O—CO—O—R$$

and R represents an optionally substituted aliphatic, cycloaliphatic or aromatic radical; these dyestuffs being suited particularly for the dyeing of synthetic organic fibers, especially polyethylene glycol terephthalate fibers, affording dyeings on these fibers which have good fastness properties and especially good fastness to light and sublimation.

3,767,682

DYESTUFFS

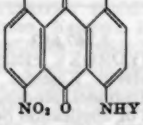
Edwin Dennis Harvey, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Sept. 24, 1971, Ser. No. 183,640

Int. Cl. C09b *1/50*

U.S. Cl. 260—379 **1 Claim**

The disperse anthraquinone dyestuffs, free from sulphonic acid groups, which are of the formula:



wherein Z is a hydrogen atom or an optionally substituted alkyl radical, and Y is an aryl radical which may carry substituents, a process for the manufacture of the said dyestuffs, and the use of the said dyestuffs for colouring synthetic textile materials.

3,767,683

2-[(ESTRA - 1,3,5-(10)-TRIEN-2-YL)THIO]-2-METHYL-PROPIONIC ACID DERIVATIVES

John W. Cusic and James R. Deason, Skokie, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Aug. 30, 1971, Ser. No. 176,313

Int. Cl. C07c *169/12*

U.S. Cl. 260—397.1 **3 Claims**

Estratrienylthio-propionic acid compounds are described herein. They are prepared starting from the appropriate mercapto compounds and are useful as antiatherogenic agents.

3,767,684

PROCESS FOR THE PREPARATION OF 6,6-DIFLUORO - 11β,17α,21 - TRIHYDROXYPREGN-4-ENE - 3,20-DIONE AND OF ITS 16-METHYL HOMOLOGS

Richard M. Scribner, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 105,665, Jan. 11, 1971, which is a continuation-in-part of application Ser. No. 31,002, Apr. 22, 1970. This application Oct. 19, 1971, Ser. No. 190,681

Int. Cl. C07c *169/30*

U.S. Cl. 260—397.4 **8 Claims**

Antiinflammatory and glucocorticoidal 6,6-difluoro-11β, 17α,21-trihyrdroxypregn-4-ene-3,20-dione, optionally substituted with an α- or β-methyl at C–16, the corresponding 21-esters and related 1,4-dienes, are made from 6,6-difluoro-3,17-diacetoxypregnane-20-ones in which the 5α-positions are substituted wtih either a fluorine or a chlorine atom. Instead of the 17α-acetoxy group, the 17α-hydroxyl can be present. The reaction sequence includes hydrolysis of the 3-acetoxy group and bromination at C–21; oxidation of the C–3 hydroxyl to the keto group; reaction with silver acetate and/or sodium acetate which gives the Δ^4-3,20-diketo-17α,21-dihydroxysteroid 21-acetate; hydrolysis of the 21-acetoxy group; and microbiological hydroxylation at C–11. Also described is dehydrogenation to give the $\Delta^{1,4}$-triol, conversion to the corresponding 9α-fluoro steriod, especially 6,6,9α-trifluoro-11β,17α,21-trihydroxy-16α-methylpregna-1,4-diene, and its 21-esters. Methods for making the starting materials also are described.

3,767,685

NOVEL 11β-HALO-STEROIDS OF THE OESTRANE SERIES

Nicolaas Pieter van Vliet, Rhenen, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

No Drawing. Filed Feb. 2, 1972, Ser. No. 223,016

Int. Cl. C07c *169/08*

U.S. Cl. 260—397.5 **6 Claims**

The present invention relates to novel Δ^4-3-desoxo-11β-halo-steroids of the oestrene series and to a process for the preparation thereof, which compounds have very strong progestational, ovulation-inhibiting, anabolic, androgenic and gonad-inhibiting properties.

3,767,686

HALOGENATED DIAMINO DIPHENYL SULFONE DERIVATIVES

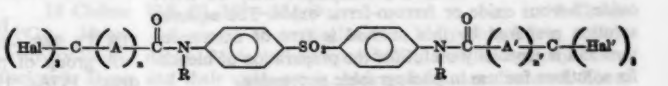
Walter T. Reichle, Millington, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 26,056, Apr. 6, 1970. This application Dec. 6, 1971, Ser. No. 205,322

Int. Cl. C07c *103/12*

U.S. Cl. 260—397.6 **6 Claims**

Compounds having the structure



wherein

Hal and Hal' are halogen radicals,
A and A' are C_1 divalent hydrocarbon or perhalocarbon radicals,
R and R' are C_1 to C_2 hydrocarbon radicals, and
n and n' are 0 to 6.

These compounds are useful as initiators or activators in the anionic polymerization of lactam monomers.

3,767,687

PROCESS FOR REMOVING DISSOLVED ORGANIC LEAD COMPOUNDS FROM AQUEOUS MEDIA

Bernard Noble Harris, Landenberg, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 4, 1972, Ser. No. 223,765
Int. Cl. C07f 7/24, 7/26
U.S. Cl. 260—437 R 10 Claims

Process for treating an aqueous medium containing dissolved organic lead compounds, for example, aqueous effluent from the manufacture of tetraalkyllead, with activated lead produced by extracting the non-lead component from a lead alloy, for example, NaPb, to substantially reduce the level of dissolved organic lead compounds in the aqueous medium.

3,767,688

COMPLEX COBALT CARBONYL COMPOUNDS

Charles E. Morrell, Summit, and Lubomyr B. Taranko, Scotch Plains, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed Dec. 15, 1971, Ser. No. 208,403
Int. Cl. C07f 15/06
U.S. Cl. 260—439 R 10 Claims

Novel compositions of matter as complex cobalt carbonyl compounds are prepared by contacting trivalent halide salts of Group V metals with alkali or alkaline earth metal cobalt carbonyl compounds under moderate temperature and pressure conditions and in the presence of a solvent and the substantial absence of oxygen. The invention also includes the reaction of the cobalt carbonyl compounds with biphyllic ligand materials to form complex cobalt carbonyl ligand compositions. These novel compositions of matter are useful as catalysts for the reaction of carbon monoxide together with other co-reacting substrates containing a wide range of organic molecules such as olefins, di- and polyolefins, aromatics, alcohols, amines, alkyl and aryl halides, olefin oxides, nitriles, etc.

3,767,689

METHOD OF PREPARING AN AQUEOUS SOLUTION OF A WATER-SOLUBLE SALT OF A FERRIC AMINOPOLYCARBOXYLIC ACID COMPLEX

Thomas S. Donovan, Ontario, and John J. Surash, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 75,761, Sept. 25, 1970, which is a continuation-in-part of application Ser. No. 11,783, Feb. 16, 1970, both now abandoned. This appplication Dec. 28, 1971, Ser. No. 213,183
Int. Cl. C07f 15/02
U.S. Cl. 260—439 R 7 Claims

An aqueous solution of an ammonium salt of a ferric aminopolycarboxylic acid complex is prepared by heating iron oxide with an aminopolycarboxylic acid, in an aqueous ammoniacal medium and neutralizing with an ammonium base. The iron oxide employed may be ferric oxide, ferrous oxide or ferroso-ferric oxide. The aqueous solution prepared by this method is free of extraneous ions and is especially useful for the preparation of bleach-fix solutions for use in photographic processing.

3,767,690

ORGANOSILICON CINNAMATES

John L. Speier, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Nov. 22, 1971, Ser. No. 201,188
Int. Cl. C07f 7/10, 7/18
U.S. Cl. 260—448.2 N 2 Claims

Silanes and siloxanes containing the group

$$\equiv SiR'S(CH_2)_3OOCCH{=}CHC_6H_5$$

are prepared by the addition of allyl cinnamate to the corresponding mercapto silane or siloxane. The compositions are useful as sunscreen agents in protective coatings and in cosmetic applications.

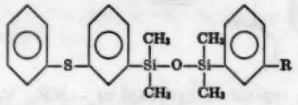
3,767,691

LOW POUR POINT FLUIDS AND BLENDS CONTAINING SAME

Frank S. Clark, St. Louis, Mo., and Walter Fink, Ruschlikon, Switzerland, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,622
Int. Cl. C07f 7/08
U.S. Cl. 260—448.2 N 4 Claims

Compounds of the formula



wherein R represents hydrogen or

have utility as low temperature lubricants and as pour point depressants for low temperature lubricant blends.

3,767,692

XANTHATE MANUFACTURE

Chu-Jen Chia, Brossard, Quebec, Canada, assignor to Canadian Industries Limited, Montreal, Quebec, Canada

No Drawing. Filed May 15, 1972, Ser. No. 253,477
Claims priority, application Canada, May 31, 1971, 114,435
Int. Cl. C07c 154/02
U.S. Cl. 260—455 B 3 Claims

An improvement in the process for the manufacture of alkali metal xanthates by the reaction of an alkyl alcohol, carbon disulphide and alkali hydroxide in the presence of an inert diluent. The improvement resides in the reduction of scale formation on the surface of the heat exchanger of the reaction vessel by addition of pellets of an inert plastic material to the reaction mixture. The use of the pellets permits an increase in the rate of production of alkali metal xanthates.

3,767,693

ESTERS OF 19-HYDROXY PROSTAGLANDIN A_2

Bengt Samuelsson, Kemiska Institutionen, Karolinska Institutet, Stockholm, Sweden

Continuation-in-part of application Ser. No. 17,830, Mar. 9, 1970, which is a continuation-in-part of application Ser. No. 481,777, Aug. 23, 1965, both now abandoned. This application June 21, 1972, Ser. No. 264,801
Claims priority, application Great Britain, July 30, 1965, 32,780/65
Int. Cl. C07c 69/16, 69/74
U.S. Cl. 260—468 D 10 Claims

A group of prostaglandins, 19-hydroxy-PGA_1, 19-hydroxy PGA_2, 19-hydroxy-PGB_1, and 19-hydroxy-PGB_2,

and their salts, esters, and acylates, are disclosed. These are useful for a variety of pharmacological uses, including blood pressure lowering, treatment of asthma and ulcers, relief of nasal congestion, and wound healing.

3,767,694

ADAMANTANE CARBOXYLIC ACID ESTERS OF CHLORAMPHENICOL

Venkatachala L. Narayanan, Hightstown, and Rudiger D. Haugwitz, Highland Park, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Jan. 6, 1971, Ser. No. 104,471

Int. Cl. C07c *69/74, 69/76*

U.S. Cl. 260—468 G 9 Claims

Adamantane carboxylic acid esters of chloramphenicol are provided which are useful as anti-bacterial agents.

3,767,695

PROSTAGLANDIN E_1, F_1, AND A_1 ANALOGS

John E. Pike and William P. Schneider, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 748,167, July 29, 1968. This application Sept. 22, 1971, Ser. No. 182,872

Int. Cl. C07c *61/36, 69/74*

U.S. Cl. 260—468 D 38 Claims

This invention is a group of prostaglandin E_1, F_1, and A_1 analogs which differ from the natural compounds in having one or more alkyl of fluoro substituents near the end of the carboxylic acid chain. These compounds are useful for the same pharmacological purposes as the natural compounds.

3,767,696

ESTERS OF 19-HYDROXY PROSTAGLANDIN A_1

Bengt Samuelsson, Kemiska Institutionen, Karolinska Institutet, Stockholm, Sweden

Continuation-in-part of application Ser. No. 17,830, Mar. 9, 1970, which is a continuation-in-part of application Ser. No. 481,777, Aug. 23, 1965, both now abandoned.

This application June 21, 1972, Ser. No. 264,798

Claims priority, application Great Britain, July 30, 1965, 32,780/65

Int. Cl. C07c *69/16, 69/74*

U.S. Cl. 260—468 D 10 Claims

A group of prostaglandins, 19-hydroxy-PGA_1, 19-hydroxy PGA_2, 19-hydroxy-PGB_1, and 19-hydroxy-PGB_2, and their salts, esters, and acylates, are disclosed. These are useful for a variety of pharmacological uses, including blood pressure lowering, treatment of asthma and ulcers, relief of nasal congestion, and wound healing.

3,767,697

ESTERS OF 19-HYDROXY PROSTAGLANDIN B_1

Bengt Samuelsson, Kemiska Institutionen, Karolinska Institutet, Stockholm, Sweden

Continuation-in-part of application Ser. No. 17,830, Mar. 9, 1970, which is a continuation-in-part of application Ser. No. 481,777, Aug. 23, 1965, both now abandoned.

This application June 21, 1972, Ser. No. 264,800

Claims priority, application Great Britain, July 30, 1965, 32,780/65

Int. Cl. C07c *69/16, 69/74*

U.S. Cl. 260—468 D 10 Claims

A group of prostaglandins, 19-hydroxy-PGA_1, 19-hydroxy PGA_2, 19-hydroxy-PGB_1, and 19-hydroxy-PGB_2, and their salts, esters, and acylates, are disclosed. These are useful for a variety of pharmacological uses, including blood pressure lowering, treatment of asthma and ulcers, relief of nasal congestion, and wound healing.

3,767,698

ESTERS OF 19-HYDROXY PROSTAGLANDIN B_2

Bengt Samuelsson, Kemiska Institutionen, Karolinska Institutet, Stockholm, Sweden

Continuation-in-part of application Ser. No. 17,830, Mar. 9, 1970, which is a continuation-in-part of application Ser. No. 481,777, Aug. 23, 1965, both now abandoned.

This application June 21, 1972, Ser. No. 264,802

Claims priority, application Great Britain, July 30, 1965, 32,780/65

Int. Cl. C07c *69/16, 69/74*

U.S. Cl. 260—468 D 10 Claims

A group of prostaglandins, 19-hydroxy-PGA_1, 19-hydroxy PGA_2, 19-hydroxy-PGB_1, and 19-hydroxy-PGB_2, and their salts, esters, and acylates, are disclosed. These are useful for a variety of pharmacological uses, including blood pressure lowering, treatment of asthma and ulcers, relief of nasal congestion, and wound healing.

3,767,699

META-UREIDOPHENOXYALKYL CARBAMATES

James A. Albright, St. Louis, Mich., and Kenneth P. Dorschner, Jacksonville, Fla., assignors to SCM Corporation, Cleveland, Ohio

No Drawing. Filed Aug. 15, 1972, Ser. No. 280,832

Int. Cl. C07c *125/06*

U.S. Cl. 260—482 C 5 Claims

Novel meta-(3-alkylated)ureidophenoxyalkyl N-alkylcarbamates are shown to have valuable herbicidal activity.

3,767,700

19-HYDROXY PROSTAGLANDIN B_2

Bengt Samuelsson, Kemiska Institutionen, Karolinska Institutet, Stockholm, Sweden

Continuation-in-part of application Ser. No. 17,831, Mar. 9, 1970, which is a continuation-in-part of application Ser. No. 481,777, Aug. 23, 1965, both now abandoned.

This application June 20, 1972, Ser. No. 264,472

Claims priority, application Great Britain, July 30, 1965, 32,780/65

Int. Cl. C07c *61/36*

U.S. Cl. 260—514 D 3 Claims

A group of prostaglandins, 19-hydroxy-PGA_1, 19-hydroxy PGA_2, 19-hydroxy-PGB_1, and 19-hydroxy-PGB_2, and their salts, esters, and acylates, are disclosed. These are useful for a variety of pharmacological uses, including blood pressure lowering, treatment of asthma and ulcers, relief of nasal congestion, and wound healing.

3,767,701

19-HYDROXY PROSTAGLANDIN B_1

Bengt Samuelsson, Kemiska Institutionen, Karolinska Institutet, Stockholm, Sweden

Continuation-in-part of application Ser. No. 17,831, Mar. 9, 1970, which is a continuation-in-part of application Ser. No. 481,777, Aug. 23, 1965, both now abandoned.

This application June 20, 1972, Ser. No. 264,474

Claims priority, application Great Britain, July 30, 1965, 32,780/65

Int. Cl. C07c *61/36*

U.S. Cl. 260—514 D 3 Claims

A group of prostaglandins, 19-hydroxy-PGA_1, 19-hydroxy PGA_2, 19-hydroxy-PGB_1, and 19-hydroxy-PGB_2, and their salts, esters, and acylates, are disclosed. These

are useful for a variety of pharmacological uses, including blood pressure lowering, treatment of asthma and ulcers, relief of nasal congestion, and wound healing.

3,767,702

19-HYDROXY PROSTAGLANDIN A_2

Bengt Samuelsson, Kemiska Institutionen, Karolinska Institutet, Stockholm, Sweden

Continuation-in-part of application Ser. No. 17,831, Mar. 9, 1970, which is a continuation-in-part of application Ser. No. 481,777, Aug. 23, 1965, both now abandoned. This application June 20, 1972, Ser. No. 264,475

Claims priority, application Great Britain, July 30, 1965, 32,780/65

Int. Cl. C07c *61/36*

U.S. Cl. 260—514 D **3 Claims**

A group of prostaglandins, 19-hydroxy-PGA_1, 19-hydroxy PGA_2, 19-hydroxy-PGB_1, and 19-hydroxy-PGB_2, and their salts, esters, and acylates, are disclosed. These are useful for a variety of pharmacological uses, including blood pressure lowering, treatment of asthma and ulcers, relief of nasal congestion, and wound healing.

3,767,703

19-HYDROXY PROSTAGLANDIN A_1

Bengt Samuelsson, Kemiska Institutionen, Karolinska Institutet, Stockholm, Sweden

Continuation-in-part of application Ser. No. 17,831, Mar. 9, 1970, which is a continuation-in-part of application Ser. No. 481,777, Aug. 23, 1965, both now abandoned. This application June 20, 1972, Ser. No. 264,476

Claims priority, application Great Britain, July 30, 1965, 32,780/65

Int. Cl. C07c *61/36*

U.S. Cl. 260—514 D **3 Claims**

A group of prostaglandins, 19-hydroxy-PGA_1, 19-hydroxy PGA_2, 19-hydroxy-PGB_1, and 19-hydroxy-PGB_2, and their salts, esters, and acylates, are disclosed. These are useful for a variety of pharmacological uses, including blood pressure lowering, treatment of asthma and ulcers, relief of nasal congestion, and wound healing.

3,767,704

OXIDATION OF ETHYLBENZENES

Yun Chung Sun and James M. Winterbottom, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed July 3, 1972, Ser. No. 268,824

Int. Cl. C07c *49/78, 63/02*

U.S. Cl. 260—524 R **5 Claims**

In the heavy metal catalyzed air oxidation of an ethylbenzene to the correponding acetophenone, the production of the analogous benzoic acid by product is greatly increased by the presence in the reaction mixture of the styrene corresponding to the ethylbenzene.

3,767,705

PROCESS FOR PRODUCING N-METHYL-N-VINYL ACETAMIDE

Herbert Eck, Manfred Hannebaum, Joseph Heckmaier, and Hellmuth Spes, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,281

Claims priority, application Germany, Apr. 18, 1969, P 19 19 797.8

Int. Cl. C07c *103/30*

U.S. Cl. 260—561 R **3 Claims**

Process for producing N-methyl-N-vinyl acetamide by reacting dimethylazomethine with acetic acid anhydride and a tertiary amine in a quantity of 0.1–0.5 mol, referred to 1 mol dimethylazomethane, in an inert solvent at a temperature of −30 to 20° C., then heating the reaction mixture to split off the acetic acid, neutralizing the reaction mixture and separating therefrom the solid non-distillable parts, extracting the resulting condensate and distillate, and collecting and fractionating the organic layers.

3,767,706

HYDRATION OF ALIPHATIC NITRILES TO AMIDES USING COPPER METAL CATALYSTS

Clarence E. Habermann and Ben A. Tefertiller, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 835,765, June 23, 1969, now Patent No. 3,631,104, which is a continuation-in-part of application Ser. No. 791,807, Jan. 16, 1969, now Patent No. 3,597,481. This application Sept. 2, 1971, Ser. No. 177,430

The portion of the term of the patent subsequent to Dec. 28, 1988, has been disclaimed

Int. Cl. C07c *103/08*

U.S. Cl. 260—561 N **9 Claims**

Aliphatic nitriles are converted to the corresponding amides by contacting the nitrile in the presence of water with a cupreous catalyst containing copper metal.

3,767,707

SEPARATION OF DIAMINE ISOMERS

James W. Cleary, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Oct. 4, 1971, Ser. No. 186,457

Int. Cl. C07c *87/36*

U.S. Cl. 260—563 R **28 Claims**

A fractional crystallization method for separating a mixture of cis- and trans-diamines or an aqueous solution of diacid salts of cis- and trans-diamines into at least two fractions with at least one of said fractions having a higher content of trans-isomer. Separation is effected in an aqueous solution having a water to diacid salt ratio in the range of about 0.5 to about 10 by weight, causing a precipitate to form by lowering the temperature of the aqueous solution, and separating the precipitated fraction having the higher content of trans-isomer. The fraction which is in solution which has a higher content of the cis-isomer than the original can also be recovered and used in suitable applications.

3,767,708

AMINOMETHYL PHOSPHOLENES

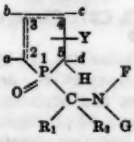
Curtis P. Smith, Cheshire, and Henri Ulrich, North Branford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Oct. 18, 1971, Ser. No. 190,374

Int. Cl. C07f *9/28*

U.S. Cl. 260—563 R **7 Claims**

Compounds are disclosed having the general formula:



wherein *a*, *b*, *c* and *d* are each selected from the group consisting of hydrogen, halogen, alkoxy of 1 to 6 carbon atoms, inclusive, phenoxy, hydrocarbyl of 1 to 6 carbon atoms, inclusive and halo-substituted hydrocarbyl of 1 to 6 carbon atoms, inclusive; F is selected from the group consisting of hydrogen, alkyl of 1 to 6 carbon atoms, inclusive, and hydroxyalkyl of 2 to 6 carbon atoms, inclusive; G is hydroxyalkyl of 2 to 6 carbon atoms, inclusive; R_1 and R_2 when taken individually are each selected from the group consisting of hydrogen, hydrocarbyl of 1 to 6 carbon atoms; R_1 and R_2 taken together with the carbon atom to which they are attached, represent a moiety selected from the group consisting of cycloalkylene and cycloalkenylene, said cycloalkylene and cycloalkenylene each having 4 to 6 carbon atoms, inclusive in the ring thereof; the broken line indicates a double bond located between the carbon atom at position 3 and one of the two carbon atoms at positions 2 and 4; Y is

hydrogen attached to whichever carbon atom at positions 2 and 4 is not part of said double bond. Disclosed also are novel intermediate compounds and methods of employing them in preparing the novel compounds of the invention.

The compounds of the invention are useful as catalysts for preparing carbodiimides from isocyanates; as surface-active agents and as reactive flame retardant components of polymer systems, such as polyurethane polymers.

3,767,709

ALCOHOL AMINE INTERCHANGE

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Sept. 2, 1971, Ser. No. 177,499
Int. Cl. C07c *85/02, 85/06*
U.S. Cl. 260—583 R 10 Claims

A tertiary amine is reacted with an alcohol or aldehyde in a liquid reaction medium containing a ruthenium, osmium, rhenium or technetium catalyst which is preferably in complex association with a biphyllic ligand to interchange the hydrocarbyl portions of the reactants. A typical process comprises contacting tributylamine with octanol in the presence of ruthenium trichloride and triphenylphosphine to produce butanol and octyldibutylamine. Aldehydes can be similarly reacted under hydrogen pressure.

3,767,710

ARYLATION OF ALLYL ALCOHOLS

Richard F. Heck, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of applications Ser. No. 659,899, Aug. 11, 1967, and Ser. No. 816,842, Apr. 16, 1969, which is a continuation-in-part of application Ser. No. 479,605, Aug. 13, 1965, all now abandoned. This application Feb. 5, 1971, Ser. No. 113,110
Int. Cl. C07c *45/00*
U.S. Cl. 260—590 12 Claims

Aldehydes and ketones are produced by reacting an allyl alcohol with an organometallic compound of a Group VIII metal at a temperature in the range of 0° to about 200° C. A representative organometallic compound is that prepared by reaction between phenylmercuric chloride and palladium chloride. The process is illustrated by the conversion of allyl alcohol to β-phenylpropionaldehyde.

3,767,711

PROCESS FOR PRODUCING ISOPROPANOL AND ACETONE

Georges Gobron, Claude Gilbert Falize, and Henri Dufour, Melle, Deux-Sevres, France, assignors to Melle-Bezons, Melle, Deux-Sevres, France

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,872
Claims priority, application France, July 7, 1969, 6922666
Int. Cl. C07c *49/04, 49/20*
U.S. Cl. 260—593 R 17 Claims

A process for the production of isopropanol and acetone which comprises contacting isobutyraldehyde and an oxygen-containing gas with a liquid reaction medium comprising a liquid solvent maintained at elevated temperature.

3,767,712

DUST-FREE POLYOLS

John H. Daniel, Jr., Willoughby, Ohio, assignor to Commercial Solvents Corporation, New York, N.Y.

No Drawing. Original application Dec. 17, 1969, Ser. No. 885,953, now Patent No. 3,658,919. Divided and this application Dec. 6, 1971, Ser. No. 205,317
Int. Cl. C07c *41/12, 43/04*
U.S. Cl. 260—615 R 7 Claims

A process for preparing dust-free dipentaerythritol, tripentaerythritol and higher molecular weight polypentaerythritols, or mixtures thereof, by precipitating them in the presence of carboxy polymethylene.

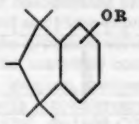
3,767,713

SATURATED INDANE DERIVATIVES AND PROCESSES FOR PRODUCING SAME

Ernst T. Theimer, Rumson, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

No Drawing. Original application Aug. 18, 1969, Ser. No. 851,048, now Patent No. 3,681,464. Divided and this application Sept. 28, 1971, Ser. No. 184,640
Int. Cl. C07c *33/06, 35/22*
U.S. Cl. 260—617 F 3 Claims

Saturated indane derivatives having the formula



wherein R is hydrogen, alkyl of 1 to 5 carbon atoms, or alkylacyl of 1 to 5 carbon atoms; and processes for producing same.

3,767,714

PROCESS FOR PREPARING CHLOROSTYRENES

Naoya Kominami, Tokyo, Nobuhiro Tamura, Saitama, and Etsuo Yamamoto, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Apr. 30, 1970, Ser. No. 33,497
Claims priority, application Japan, May 14, 1969, 44/36,584; June 24, 1969, 44/49,317; June 28, 1969, 44/50,732
Int. Cl. C07c *25/28*
U.S. Cl. 260—650 R 15 Claims

Mono-, di- and tri-chlorostyrenes, which are useful as monomers for the production of polymers and as curing agents for fiber-reinforced plastics, are prepared in one step with high yields by reacting a corresponding mono-, di- or tri-chlorobenzene with ethylene and an oxygen-containing gas in the presence of a palladium salt of fatty acid with or without an alkali salt of fatty acid.

3,767,715

METHOD FOR PREPARING BERYLLIUM COMPOUNDS

John A. Snover, Beverly Farms, and Richard D. Donovan, Peabody, Mass., assignors to Metal Hydrides Incorporated, Beverly, Mass.

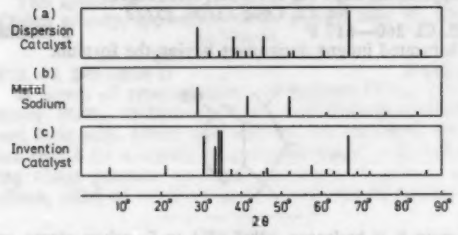
No Drawing. Filed July 26, 1962, Ser. No. 214,445
Int. Cl. C07f *3/00*
U.S. Cl. 260—665 R 30 Claims

1. The method for preparing a compound conforming to the formula Li_xBeR_{3+x} where x is a number from zero to one and R is a hydrocarbon radical which comprises forming a suspension of a beryllium halide in a liquid hydrocarbon solution of a compound conforming to the formula RLi in which the compound RLi and beryllium halide are present in the molar ratio between about 2 to about 3 moles of the compound RLi for each mole of beryllium halide, and adding to said suspension as ether which is a solvent for the beryllium halide at a rate such that the temperature of the reaction mixture does not substantially exceed normal room temperature, thereby forming a solution of a compound conforming to the formula Li_xBeR_{2+x} in the mixture of liquid hydrocarbon and ether containing precipitated lithium halide, the amount of ether used being at least equal to that required to dissolve the amount of beryllium halide used, said halide being selected from the group consisting of chloride, bromide and iodide.

3,767,716
PROCESS FOR THE PRODUCTION OF 1,3-CYCLOOCTADIENE

Tsuneyuki Nagase, Gohu Suzukamo, and Masami Fukao, Takatsuki, Japan, assignors to Sumitomo Chemical Company Limited

Filed Sept. 27, 1971, Ser. No. 183,771
Claims priority, application Japan, Nov. 20, 1970, 45/103,015; June 23, 1971, 46/45,859
Int. Cl. C07c 5/24
U.S. Cl. 260—666 A 14 Claims



A process for production of 1,3-cyclooctadiene which comprises contacting 1,5-cyclooctadiene with a catalyst obtained by heating an alkali metal, an alkali metal hydroxide and alumina at a temperature higher than the melting point of the alkali metal. By such process, 1,3-cyclooctadiene in cis-cis form can be produced predominantly in an excellent yield.

3,767,717
PROCESS FOR PREPARING ALKENYL NORBORNENES

Henricus M. J. C. Creemers, Geleen, Netherlands, assignor to Stamicarbon N.V., Heerlen, Netherlands

No Drawing. Filed Oct. 18, 1971, Ser. No. 189,830
Claims priority, application Netherlands, Oct. 24, 1970, 7015609
Int. Cl. C07c 5/24
U.S. Cl. 260—666 PY 15 Claims

A process for the preparation of alkenyl norbornenes is disclosed. Alkenyl norbornenes are prepared by reaction of a norbornadiene-2,5 with an open chain alkene having from 2 to 10 carbon atoms and a terminal double bond, the process being carried out with a catalyst system essentially comprising (1) an alkyl compound of a metal of one of the Groups I, II and III of the Periodic Table, preferably aluminium or magnesium, and wherein the alkyl groups have from 1 to 10 carbon atoms; and (2) the inorganic or organic acid salt of a metal of Group VIII of the Periodic Table; as well as, optionally, (3) an aliphatically-saturated phosphine, carrying either alkyl or aryl substituents of up to 10 carbon atoms each; and (4) a second, fully alkylated, compound of a metal of one of the Groups I, II and III of the Periodic Table, the alkyl groups of which compound can have up to about 10 carbon atoms. The process is conducted at temperatures of at most about 50° C. but generally above about —20° C., and in the pressure range of atmospheric up to about 30 atmospheres.

3,767,718
FORMATION OF BICYCLOOLEFINS

Marvin M. Johnson, Donald C. Tabler, and Gerhard P. Nowack, Bartlesville, Okla., assignors to Phillips Petroleum Company

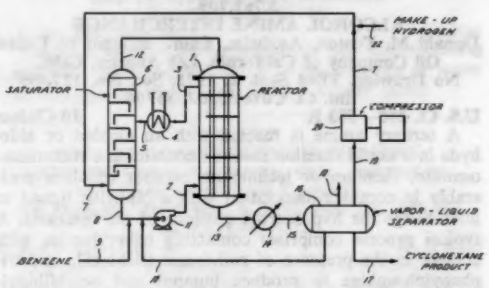
No Drawing. Continuation of abandoned application Ser. No. 8,073, Feb. 2, 1970. This application Jan. 12, 1972, Ser. No. 217,255
Int. Cl. C07c 13/44
U.S. Cl. 260—666 PY 7 Claims

A method for the formation of bicycloolefins from cycloalkadienes which involves contacting the cycloalkadiene with hydrogen in the presence of a reduced tungsten-arsenic catalyst, preferably on a support.

3,767,719
HYDROGENATION OF BENZENE TO FORM CYCLOHEXANE

James H. Colvert, Edward F. Janes, Harold C. Kaufman, and Randlow Smith, Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 16, 1971, Ser. No. 208,730
Int. Cl. C07c 149/00
U.S. Cl. 260—667 7 Claims



A process for hydrogenating benzene in the vapor phase with molecular hydrogen in a reaction zone in the presence of diluent cyclohexane vapor and a hydrogenation catalyst wherein a portion of the heat of reaction is absorbed from the reaction zone by indirect heat transfer means into a circulating liquid stream comprising cyclohexane and benzene and wherein such heated circulating liquid stream is contacted with a molecular hydrogen containing gas to form a vaporized reaction charge mixture comprising benzene, hydrogen and diluent cyclohexane. Reaction zone temperatures are maintained within a desirable operating range by absorbing heat from the reaction zone into the circulating liquid stream and such absorbed heat is subsequently utilized to vaporize the benzene and cyclohexane components of the reaction charge mixture and to preheat the reaction charge mixture to the desired reaction inlet temperature.

3,767,720
SELECTIVE HYDROGENATION OF AROMATIC HYDROCARBONS TO CYCLOOLEFINS

William Charles Drinkard, Jr., Orange, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 138,801, Apr. 29, 1971. This application Feb. 25, 1972, Ser. No. 229,565
Int. Cl. C07c 5/10
U.S. Cl. 260—667 14 Claims

A process is provided for the preparation of a cycloolefin which comprises the partial hydrogenation of an aromatic hydrocarbon in an aqueous alkaline solution in the presence of a reduced catalyst formed from a compound of a Group VIII metal. The hydrogenation can be carried out by adding to the catalyst system a cation such as that provided by zinc chloride or chromous chloride or a carbonyl of chromium, molybdenum or tungsten or both the cation and the carbonyl.

3,767,721
PROCESS FOR ISOMERIZING AROMATIC HYDROCARBONS

Takeshi Sonoda and Katsuo Sugai, Kamakura, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

No Drawing. Filed Dec. 8, 1971, Ser. No. 206,120
Int. Cl. C07c 5/24
U.S. Cl. 260—668 A 6 Claims

This invention relates to a process for isomerizing an aromatic hydrocarbon, especially an alkyl benzene hav-

ing more than two carbon atoms in its alkyl substituents on benzene nuclei. More specifically, this invention relates to a process for isomerizing an alkyl benzene utilizing a novel catalyst composition containing partially dealkalized mordenite and platinum-alumina component as its essential ingredient.

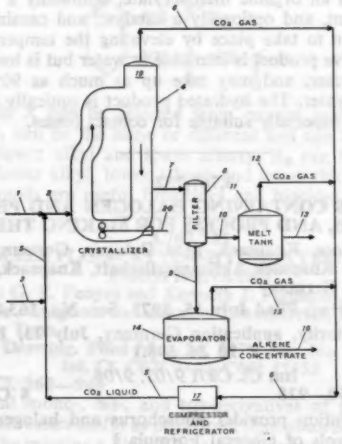
3,767,722
PROCESS FOR ALKYLATING ALKYL BENZENES
Irving Schwager, Hopewell Junction, N.Y., assignor to Texaco Inc., New York, N.Y.
No Drawing. Filed Dec. 13, 1971, Ser. No. 207,551
Int. Cl. C07c *3/52*
U.S. Cl. 260—668 B **9 Claims**

This process concerns the alkylation of monoalkylated, mononuclear aromatics through the free radical initiated addition of the aromatics to olefins.

3,767,723
POLYAROMATIC PRODUCTION
Raymond L. Cobb, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Nov. 22, 1971, Ser. No. 201,193
Int. Cl. C07c *5/14*
U.S. Cl. 260—670 **8 Claims**

Polyaromatics are produced in good yield and high selectivity by reacting an aromatic hydrocarbon with an aromatic aldehyde in the presence of a Group I*a*, II*a* or II*b* catalyst at an elevated temperature. In one embodiment, biphenyl is produced by the reaction of benzene with benzaldehyde utilizing a basic catalyst. The products are useful as stable heat exchange materials, e.g., as moderators in nuclear reactors.

3,767,724
EXTRACTIVE CRYSTALLIZATION METHOD FOR THE SEPARATION OF MIXTURES OF ALKENES AND ALKANES
Tan Hok Gouw, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Oct. 15, 1971, Ser. No. 189,579
Int. Cl. C07c *9/00, 11/12*
U.S. Cl. 260—676 R **4 Claims**

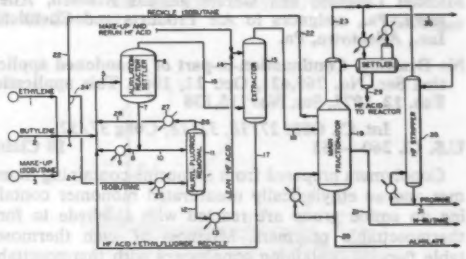


An acyclic hydrocarbon mixture containing a crystallizable alkane component and an alkene component is separated by an extractive crystallization using liquid carbon dioxide.

3,767,725
METHOD OF TRANSPORTING ACETYLENE
David G. Walker, Baytown, and Donald A. Keyworth, Houston, Tex., assignors to Tenneco Chemicals, Inc.
No Drawing. Continuation-in-part of application Ser. No. 878,356, Nov. 20, 1969, now Patent No. 3,647,843. This application Jan. 7, 1972, Ser. No. 216,280
Int. Cl. C07c *11/24, 7/00*
U.S. Cl. 260—679 A **8 Claims**

Acetylene is transported safely and economically by contacting an acetylene-containing gas in a first location with a solution of cuprous aluminum tetrachloride in an aromatic hydrocarbon or halogenated aromatic hydrocarbon to form a solution of an acetylene-cuprous aluminum tetrachloride complex in the aromatic solvent, transporting the solution containing the acetylene complex from the first location to a second location, contacting the solution in the second location with a countercurrent stream of a hydrocarbon vapor at 75° C. to 180° C., and recovering substantially pure acetylene from the resulting gas stream.

3,767,726
EXTRACTION OF ALKYL FLUORIDE FROM AN ALKYLATE HYDROCARBON WITH A LEAN HF ACID
Thomas Hutson, Jr., and Cecil O. Carter, Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Nov. 11, 1971, Ser. No. 197,835
Int. Cl. C07c *3/54*
U.S. Cl. 260—683.42 **8 Claims**

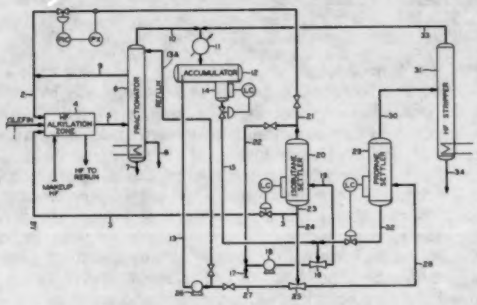


In the alkylation of an isoparaffin with an olefin in the presence of hydrofluoric acid as catalyst wherein the total feed stream is converted in part to alkyl fluoride, the alkylation reaction effluent stream containing alkyl fluoride is contacted with liquid hydrogen fluoride which has been treated by countercurrent extraction with a stream comprising isobutane, said treated hydrogen fluoride is used to extract the alkyl fluoride from the alkylation reaction effluent stream and both the alkyl fluoride enriched butane stream and the alkyl fluoride enriched hydrogen fluoride stream are recycled to the alkylation reaction zone.

3,767,727
TREATMENT OF PROPANE IN HF ALKYLATION WITH PURIFIED HF
Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Sept. 1, 1971, Ser. No. 177,072
Int. Cl. C07c *3/54*
U.S. Cl. 260—683.48 **5 Claims**

In an alkylation of an isoparaffin with an olefin, a light hydrocarbon phase, e.g., a propane phase and an acid

phase, both phases containing organic fluoride, are recovered upon fractionation of the alkylation reaction effluent, the acid phase is contacted with isoparaffin to react out organic fluoride, isoparaffin phase and acid phase are thus obtained, the isoparaffin phase containing alkylate produced from the organic fluoride, the acid phase now



containing relatively less organic fluoride then being admixed with the light hydrocarbon or propane containing phase, thus removing into the acid organic fluoride in said phase whereupon the acid phase is reacted with isoparaffin to produce additional alkylate from the organic fluoride.

3,767,728

COATING COMPOSITIONS AND SOLID SURFACES COATED THEREWITH

Michael Langsam and Gerald Jerome Mantell, Allentown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 769,421, Oct. 21, 1968. This application Feb. 12, 1971, Ser. No. 115,138

Int. Cl. C08f *27/18, 37/18;* C08g *37/32*

U.S. Cl. 260—853 **10 Claims**

Copolymers prepared from a fluorine-containing monomer and an ethylenically unsaturated monomer containing an amide group are reacted with aldehyde to form thermosettable polymers. Mixtures of such thermosettable fluorine-containing copolymers with thermosettable non-fluorine-containing copolymers provide useful resinous coating compositions for solid substrates.

3,767,729

BENZYLIDENE SORBITOLS AS UNSATURATED POLYESTER COMPOSITION THICKENERS

Koichi Murai, Kyoto, Yasuo Choshi, Uji, and Toshiaki Kobayashi, Kyoto, Japan, assignors to New Japan Chemical Company, Limited, Kyoto-shi, Japan, a juridical person of Japan

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,276

Claims priority, application Japan, Feb. 16, 1971, 46/7,282

Int. Cl. C08f *43/02*

U.S. Cl. 260—861 **7 Claims**

In producing a shaped product of an unsaturated polyester resin by shaping a composition of an unsaturated polyester dissolved in a vinyl monomer and curing the shaped composition, a method which is characterized in that at least one of mono-, di- and tri-benzylidene sorbitols is added to said composition in a concentration of 0.3 to 10 weight percent.

3,767,730

METHOD FOR THE PRODUCTION OF MODIFIED POLYPHENYLENE OXIDES

Seizo Nakashio, Nishinomiya, and Isao Maruta, Kazuo Hayatsu, and Yoichi Kono, Takatsuki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 887,418, Dec. 22, 1969. This application Jan. 17, 1972, Ser. No. 218,591

Int. Cl. C08f *1/11, 19/08*

U.S. Cl. 260—880 R **9 Claims**

A method for producing graft polymers by polymerizing in a dispersed state 0.3–10 parts by weight of a styrene type compound in the presence of 1 part by weight of a polyphenylene oxide and 0.01–2 parts by weight of a rubbery polymer in an aqueous medium containing a solvent for the polyphenylene oxide, a surface active agent and a catalyst. According to this method, it is possible to produce graft polymers which are large in polyphenylene oxide content and are high in graft efficiency of styrene type compounds. Further, the polymerization can be effected at a low styrene type compound concentration and the styrene type compound can be polymerized at a high conversion. Graft polymers obtained according to the above-mentioned method not only possess the properties inherent to polyphenylene oxides but also have improved flow property and enhanced oxidation and impact resistance.

3,767,731

CONTACT LENSES FROM HYDROPHILIC GEL POLYMERS OF POLYVINYLPYRROLIDONE, MONOMERIC VINYLPYRROLIDONE AND METHACRYLIC MODIFIER

Maurice Seiderman, 3306 Deronda Drive, Hollywood, Calif. 90028

No Drawing. Continuation-in-part of application Ser. No. 845,499, July 28, 1969, now Patent No. 3,639,524. This application Dec. 20, 1971, Ser. No. 210,191

The portion of the term of the patent subsequent to Feb. 1, 1989, has been disclaimed

Int. Cl. C08f *15/40;* G02c *7/04*

U.S. Cl. 260—885 **8 Claims**

A plastic or resin product obtained by mixing comminuted polyvinylpyrrolidone, vinylpyrrolidone, a modifier such as an organic methacrylate, optionally a crosslinking agent, and optionally a catalyst; and causing polymerization to take place by elevating the temperature. The inventive product is insoluble in water but is hydratable with water, and may take up as much as 90% by weight of water. The hydrated product is optically transparent and especially suitable for contact lenses.

3,767,732

POLYOLS CONTAINING HALOGEN AND PHOSPHORUS, AND PROCESS FOR MAKING THEM

Werner Klose, Knapsack, near Cologne, Germany, assignor to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

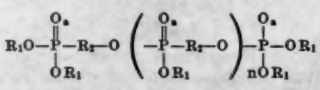
No Drawing. Filed July 15, 1971, Ser. No. 163,098

Claims priority, application Germany, July 23, 1970, P 20 36 595.1

Int. Cl. C07f *9/02, 9/08*

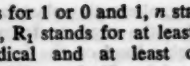
U.S. Cl. 260—928 **4 Claims**

The invention provides phosphorus and halogen-containing polyols of General Formula I



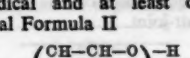
(I)

in which *a* stands for 1 or 0 and 1, *n* stands for a number between 0 and 4, R_1 stands for at least one halogenated hydrocarbon radical and at least one hydroxylated radical of General Formula II



(II)

and R_2 stands for a radical of General Formula III



(III)

the substituents R_3 and R_4, respectively, in Formulae II and III standing for a hydrogen atom or a hydrocarbon radical having from 1 to 6 carbon atoms and being halogen-substituted, if desired, and *m* stands for a number between 1 and 10.

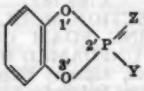
3,767,733

BENZO-(1',3',2')-DIOXAPHOSPHOLES

Lothar G. Dulog, Sint-Martens-Latem, and Sylvain A. R. Dewaele, Evergem, Belgium, assignors to S.A. Texaco Belgium N.V., Brussels, Belgium

No Drawing. Filed Sept. 30, 1971, Ser. No. 185,387
Int. Cl. C07f *9/08, 9/14, 9/24*
U.S. Cl. 260—937 **4 Claims**

Phosphorus derivatives of o-dihydroxybenzenes effective as lubricant additives are defined by the formula:



wherein Z represents oxygen or sulfur or may be absent; Y represents NHR or NR_2, where R is alkyl having up to 30 carbons in the chain or aryl or aralkyl having up to 22 carbons. The compounds are useful in lubricating compositions when present therein in an amount ranging from about 0.01 to 50 percent by weight of the composition.

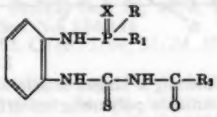
3,767,734

PHOSPHORYLATED THIOUREA COMPOSITIONS

Alexander Mihailovski, Berkeley, and Don R. Baker, Orinda, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Dec. 29, 1971, Ser. No. 213,714
Int. Cl. A01n *9/36;* **C07f** *9/08, 9/24*
U.S. Cl. 260—938 **20 Claims**

New compounds corresponding to the generic formula:



wherein X can be selected from oxygen and sulfur, R and R_1 can be the same or different and can be selected from lower alkyl and lower alkoxy, R_2 can be selected from lower alkyl, lower alkoxy and lower thioalkyl. The compounds are useful fungicides and biocides.

3,767,735

DIALKYL-3-ACETYL-4-HYDROXYBENZYL PHOSPHONATES

Joseph G. E. Fenyes and Kenneth J. Flanagan, Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

No Drawing. Filed Mar. 24, 1971, Ser. No. 127,776
Int. Cl. C07f *9/40;* **C08f** *45/58*
U.S. Cl. 260—946 **8 Claims**

Metal mono-, bis-, and tris-derivatives of phosphonic acid half-esters useful as ultraviolet light absorbers are prepared by reacting a dialkyl-3-acetyl-4-hydroxybenzyl phosphonate with an alkali-metal hydroxide to form the alkali-metal derivative which is then converted to the bis- or tris-derivative by reaction with a bi- or trivalent metal chloride.

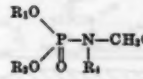
3,767,736

DIALKYL N-SUBSTITUTED PHOSPHORAMIDATE CONTAINING FLAME RETARDANTS

Patrick Michael Burke, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 13, 1970, Ser. No. 80,388
Int. Cl. C07f *9/24*
U.S. Cl. 260—950 **5 Claims**

Cellulosic material can be flameproofed by incorporating in it a flameproofing amount of a phosphorus compound having the formula



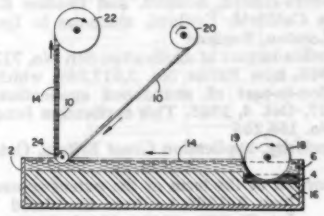
wherein R_1 is a C_1 to C_3 alkyl group, R_2 is a C_1 to C_3 alkyl group, or R_1+R_2 is a C_3 to C_5 alkylene group with its valencies in 1,3-relation; R_3 is H or a C_1 to C_3 alkyl group; and R_4 is H, $—CH_3$, $—C_2H_5$ or $—CH_2OR_3$. Novel flameproofing compounds are those in which each of R_1 and R_2 is CH_3, R_4 is H and R_3 is H or a C_1 to C_3 alkyl group. Other novel flameproofing compounds are those in which R_1 is a C_1 to C_3 alkyl group, R_2 is a C_1 to C_3 alkyl group, R_3 is H or a C_1 to C_3 alkyl group and R_4 is CH_2OR_3, in which R_3 is defined as above. Water-soluble aminoplast resin precondensates containing at least two moles of condensed formaldehyde can be combined with the phosphorus compounds to improve durability of flameproofing to laundering.

3,767,737

METHOD FOR PRODUCTION CASTING OF ULTRATHIN POLYMER MEMBRANES

Jerry E. Lundstrom, Schenectady, N.Y., assignor to General Electric Company

Filed Sept. 7, 1971, Ser. No. 177,988
Int. Cl. B29d *7/06, 27/04*
U.S. Cl. 264—41 **15 Claims**



Ultrathin polymer membranes, which are non-porous but permeable, are provided by continuously transferring a polymer-containing casting solution upwardly through a floating support liquid and removing the solvent from the solution to form the membranes on the surface of the support liquid.

3,767,738

METHODS OF PRILLING SULFUR FOR TRANSPORTING THROUGH A PIPELINE

Anthony G. Fonseca and Richard L. Every, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Oct. 20, 1971, Ser. No. 191,128
Int. Cl. B01j *2/06*
U.S. Cl. 264—7 **6 Claims**

The present invention relates to an improved method of prilling sulfur for transporting in a pipeline with a minimum of sulfur precipitation and adherence to the internal parts of the pipeline system. The improvement comprises the prilling of sulfur into a polyhydroxy compound or aqueous mixtures thereof to form a protective coating on the surfaces thereof to inhibit the degradation

caused by the physical treatment given same by the movement through the pipeline as well as tLe chemical attack by the carrier fluid.

3,767,739

METHOD FOR MAKING A SHAFT SEAL WITH AN ALMOST ENTIRELY MOLDED LIP

Stanley N. Smith, Farmington, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Nov. 8, 1971, Ser. No. 196,508
Int. Cl. B29c 17/12
U.S. Cl. 264—161 1 Claim

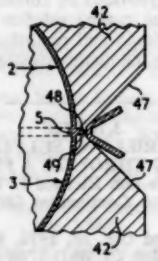
A radial shaft seal is molded to provide substantially the entire lip configuration except for a very narrow portion on one side of the lip, from which a hat extends out. The as-molded seal is trimmed to cut off this hat portion substantially in alignment with the major portion of the adjoining lip wall. This provides good goemetrical consistency, including excellent spring-groove-to-contact relationship and make it easier to manufacture the mold used in the process. The process provides for good compound flow, keeps the mold clean, and provides a much more consistent lip configuration than was available heretofore.

3,767,740

METHOD FOR FORMING TABLE-TENNIS BALLS

James Jones-Hinton, Solihull, and Thomas E. H. Gray, Sutton Coldfield, England, assignors to Dunlop Limited, London, England

Continuation-in-part of application Ser. No. 722,436, Apr. 18, 1968, now Patent No. 3,617,589, which is a continuation-in-part of abandoned application Ser. No. 492,617, Oct. 4, 1965. This application June 24, 1971, Ser. No. 156,206
Claims priority, application Great Britain, Oct. 14, 1964, 41,828/64
The portion of the term of the patent subsequent to Nov. 2, 1988, has been disclaimed
Int. Cl. B29c 17/04, 17/08, 27/04
U.S. Cl. 264—27 9 Claims



A method for forming table-tennis balls from a large number of thermoplastic materials including polyvinyl chloride and terpolymers of acrylonitrile with butadiene and styrene, which includes the steps of aligning two hemispheres of a rigid thermoplastic material to form a spherical cavity, subjecting the edges of each hemisphere to a high frequency, alternating electric current to soften and adhere together the edges to form a butt-joint and forming a reinforcing bead on the inside surface of the ball around the butt-joint.

3,767,741

MAKING CARBON FIBERS FROM SOLVENT EXTRACTED AND AIRBLOWN VACUUM DISTILLATION RESIDUES OF PETROLEUM

Mitsuru Toyoguchi, Kanagawa, and Hiroshi Iijima and Kunihiko Moriya, Tokyo, Japan, assignors to Mitsubishi Oil Co., Ltd., Tokyo, Japan

No Drawing. Filed Dec. 10, 1970, Ser. No. 97,023
Claims priority, application Japan, Feb. 20, 1970, 45/14,636
Int. Cl. C01b 31/07
U.S. Cl. 264—29 20 Claims

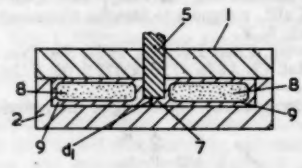
A process for the production of a carbon fiber, which comprises removing the low molecular weight saturates fraction from the vacuum distillation residue of petroleum by solvent extraction and subjecting the product obtained to an airblowing treatment to obtain a bituminous material having a penetration of from 0 to 2 and a softening point of from 130 to 200° C. and then melt-spinning the bituminous material and carbonizing it, is disclosed.

3,767,742

PROCESS OF INJECTION MOULDING A HINGED ARTICLE HAVING FOAM CORED MEMBERS JOINED BY AN UNFOAMED HINGE

Maurice Henry Robin, Alderley Edge, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of abandoned application Ser. No. 747,328, July 24, 1968. This application Nov. 30, 1970, Ser. No. 93,917
Claims priority, application Great Britain, July 26, 1967, 34,400/67; Apr. 30, 1968, 20,470/68
Int. Cl. B29d 9/00, 27/00; B32b 7/02
U.S. Cl. 264—45 5 Claims



A method of forming a hinged article which comprises, injecting an unfoamable polymeric material into a mould cavity, subsequently injecting a foamable polymeric composition into the mould, enlarging the mould cavity except at the hinge defining component of the mould to cause foaming except in the area of the hinge defining component and allowing the material to set to form two foam cored members connected by a hinge of unfoamed material.

3,767,743

METHOD FOR PREPARING MICROCELLULAR POLYURETHANE ELASTOMERS WITH INTEGRAL SKINS USING A COMBINATION OF TERTIARY AMINE, ORGANOMERCURY COMPOUND, AND ORGANOLEAD AS CATALYST

Fritz Hostettler, Freehold, N.J., and George W. Huffman, Crystal Lake, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

No Drawing. Filed Jan. 12, 1972, Ser. No. 217,279
Int. Cl. C08g 22/44
U.S. Cl. 264—48 6 Claims

This invention relates to a method for preparing microcellular elastomers having integral skins which are substantially non-porous, said method comprising contacting a mixture of specified polyols with methylene bis(4-phen-

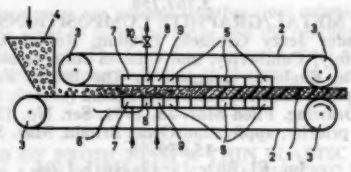
yl-isocyanate) in the presence of a blowing agent and a catalyst system consisting of a tertiary amine, an organomercury compound, and an organolead compound.

3,767,744

PROCESS FOR DECREASING THE MINIMUM RESIDENCE TIME DURING THE MOLDING OF FOAMED POLYSTYRENE ARTICLES

Norbert Holl, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed Feb. 16, 1971, Ser. No. 115,630
Claims priority, application Germany, Feb. 21, 1970, P 20 08 126.9
Int. Cl. B29c *25/00*; B29d *27/00*
U.S. Cl. 264—51 **3 Claims**



A method of decreasing the minimum residence time in the mold in the manufacture of articles of foamed polystyrene, by pressuring air into the mold. Prefoamed polystyrene particles are introduced into double-walled molds or channels having perforated walls. Steam at a pressure of from 0.5–1.2 atmospheres gauge is then introduced into the molds or channels to foam and coalesce the particles together. Subsequently, a gas (preferably air) initially at a pressure of 0.2 to 1.5 atmospheres gauge is into mold or channel and steadily reduced to 0 to 0.2 atmosphere gauge. The product is then removed from the mold or channel.

3,767,745

HOT PRESSING CERAMIC OXIDES TO TRANSPARENCY BY HEATING IN ISOTHERMAL INCREMENTS

George E. Gazza, Sudbury, and Sunil K. Dutta, Waltham, Mass., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Continuation-in-part of abandoned application Ser. No. 81,612, Oct. 16, 1970. This application Feb. 7, 1972, Ser. No. 224,244
Int. Cl. C04b *35/64, 35/24, 35/44*
U.S. Cl. 264—65 **3 Claims**

A pressure sintering process for the fabrication of ultrafine grained ceramics having improved strength and enhanced transparency comprising the cold compressing of a ceramic oxide powder having a cubic crystal structure, removing undesired gases, raising to a temperature at which full density of the compact can be obtained in isothermal increments of about 50° under elevated pressures while maintaining the temperature at each incremental increase for a period of about 50–60 minutes, and recovering the product. Materials having a cubic crystal structure such as $MgAl_2O_4$, $LiAl_5O_8$, $Y_3Al_5O_{12}$, MgO and ZnO are suitable for hot pressing in this process.

3,767,746

METHOD OF FORMING A TEXTURED SURFACE ON A DEFORMABLE SHEET

Paul Lewis Earle, Martinsville, and Andrew Musz, Raritan, N.J., and Jan Jozef Maria Vandervelden, Mol, Belgium, assignors to Johns-Manville Corporation, New York, N.Y.

Filed July 8, 1971, Ser. No. 160,857
Int. Cl. B28b *1/10*
U.S. Cl. 264—69 **30 Claims**

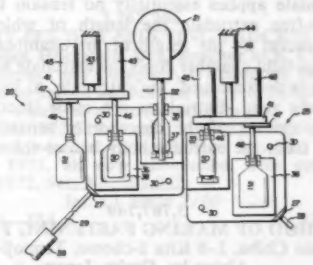
An improved process and apparatus for vibration impact texturing of asbestos cement products and an apparatus therefor. Prior to placing a deformable material on a mold carrying a negative impression of a pattern desired to be imparted to the deformable material, the mold is coated with a liquid which is capable of being absorbed by the deformable material to displace air from recessed areas of the mold. The deformable material while on the mold is subject to the action of rapidly moving members to transfer the pattern to the material. At least some of the rapidly moving members which first impact against the deformable material have sharp pointed ends and the remaining members have blunt ends. After impact by the reciprocating members, the material on the mold is heated to preset the deformable material. The presently preferred deformable material is asbestos-cement in sheet form.

3,767,747

METHOD FOR BLOW MOLDING

Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Jan. 4, 1971, Ser. No. 103,624
Int. Cl. B29c *17/07*
U.S. Cl. 264—89 **7 Claims**



An improved method for forming blow molded articles of enhanced physical characteristics by orienting the material during the formation of the article. A two-stage blowing operation is provided wherein a pre-form blow mold effects a uniform and controllable transfer of heat from a freely extruded tube. The pre-form is conditioned, both thermally and dimensionally, within the pre-form for most effective orientation during a subsequent final blowing operation.

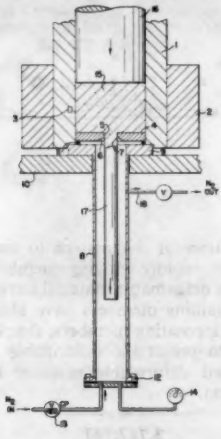
Manipulatively, the disclosed method provides a completely overlapped pre-blowing and final blowing operation, and more than one set of pre-blow and final blow molds may be utilized at a single extruder orifice, if desired. Further, the direction and extent of movement of the molds adapts the method to presently existing blow molding machines, while increasing the machine output.

Successively utilized blow tubes form and reform the open or blowing end of the tube to a final configuration. In the manufacture of containers, the two successively utilized blow tubes form an accurate, dimensionally stable finish for a bottle while also severing any neck flash from the finish.

3,767,748
PROCESS OF EXTRUSION WITHOUT DISTORTION OF EXTRUDATE

King H. Rosette, Chagrin Falls, Ohio, assignor to Kewanee Oil Company, Bryn Mawr, Pa.

Filed July 28, 1971, Ser. No. 166,725
Int. Cl. B29f 3/00
U.S. Cl. 264—89 4 Claims

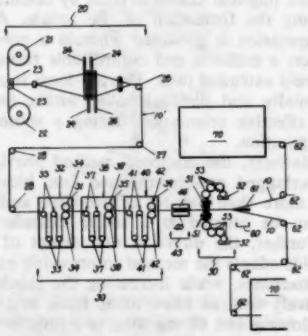


A downward extrusion process of a plastic material in a controlled environment within a fluid-tight chamber to permit the forming of an extrudate with a cross section substantially identical to that of the die opening. Pressure in the chamber is controlled so that the weight of the extrudate applies essentially no tension to permit a distortion-free extrudate the length of which is unrestrained except by the length of the chamber. The fluid in the fluid-tight chamber cools the extrudate so that when extrusion is discontinued, the extrudate, at its lower end, is relatively rigid. Extrudates are made discontinuously, requiring opening of the chamber or separation of the chamber from the extruder body before the extrudate is removed.

3,767,749
METHOD OF MAKING FASTENING FABRIC

Yoshio Chiba, 1–8 Kita 2-chome, Tennoji-machi, Abeno-ku, Osaka, Japan

Filed Dec. 13, 1971, Ser. No. 207,325
Int. Cl. B29d 5/00
U.S. Cl. 264—103 1 Claim



This invention relates to method for making separable fastening fabric in fabric fastener. The method comprises the steps of forming a number of projecting piles having free ends and made of thermoplastic resinous material on one surface of a base fabric; soaking said base fabric in liquid in a container; removing said base fabric from said container thereby forming a liquid layer on said base fabric among said projecting piles; and then passing said base fabric along a heater and heating same in such a manner that said one surface of said base fabric having said projecting piles faces said heater and subjecting said projecting piles and liquid layer to heat of the heater such that said liquid layer evaporates to expose free ends of said piles and to the extent of said evaporation of said layer the exposed free ends of said filaments are melted and swelled by surface extension to spherically swollen headed pile elements on said base fabric.

3,767,750
METAL/GRAPHITE COMPOSITIONS

Aleksander Jerzy Groszek, London, Robert Chalmers Pitkethly, Camberley, and Charles John Geach, Shepperton, England, assignors to The British Petroleum Company, Limited, London, England

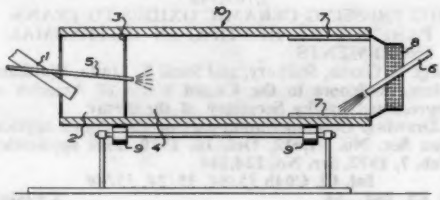
No Drawing. Filed Mar. 23, 1971, Ser. No. 127,409
Claims priority, application Great Britain, Mar. 31, 1970, 15,059/70
Int. Cl. B02c 19/12; H01b 1/04
U.S. Cl. 264—105 2 Claims

Conductive noble/metal graphite compositions useful as electrodes or catalysts are prepared by grinding the metal and graphite together in an organic liquid.

3,767,751
PROCESS FOR MAKING PELLETIZED GLASS BATCHES

Bo Kurt Wilhelm Simmingsköld and Vlastimil Carbol, Vaxjo, Sweden, assignors to Glasforskningsinstitutet, Vaxjo, Sweden

Filed July 8, 1971, Ser. No. 160,657
Int. Cl. B01j 2/12
U.S. Cl. 264—117 5 Claims



A process for making pelletized glass batches by mixing pulverulent batch constituents and adding water during rotation and mixing, wherein the pelletization is carried out at a temperature of 100–600° C. and the water is supplied during the pelletizing operation proper is converted into steam.

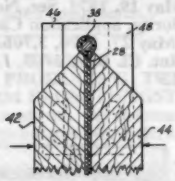
3,767,752
METHOD OF MAKING A MAP HOLDER OR THE LIKE

Albert A. Karlyn, Wethersfield, Conn., and Daniel W. Fedak, Prompton, Pa., assignors to Gentex Corporation, New York, N.Y.

Continuation of application Ser. No. 43,285, Apr. 23, 1970, which is a division of application Ser. No. 699,408, Jan. 22, 1968, now Patent No. 3,553,864. This application Nov 15, 1971, Ser. No. 201,593
Int. Cl. B29c 17/02
U.S. Cl. 264—134 3 Claims

A method of making a map holder or the like having a hinge therein in which a flat sheet of transparent material, one side of which may be covered with a flatting

agent, is placed over an elongated cylindrical rod extending across the sheet to divide the sheet into two parts, is heated to a plastic state to cause the parts to fall downwardly to positions generally tangential to the rod and



then the two parts are pressed together over substantially their entire areas to form the hinge and the resultant article then is cooled. The folded and pressed sheet may be slit in a direction perpendicular to the axis of the hinge to make a plurality of map holders.

3,767,753

METHOD OF PRODUCING A THIN PLASTIC DIAL PLATE AND IN PARTICULAR A PLASTIC DATE WHEEL

Risuke Suzuki, 4–2, 2-chome, Mamada, Ichikawa-shi, Chiba-ken, Japan

Filed June 23, 1971, Ser. No. 155,885

Int. Cl. B29c *25/00*

U.S. Cl. 264—138 **10 Claims**

This invention relates to a method of producing a thin plastic dial plate and in particular a plastic date wheel equipped in the mechanism of the wrist-watch and comprises a process of injection-molding said dial plate united with an external or internal circular brim frame or a circular disk instead of said brim frame in order to improve the flow of plastic resin in the injection-molding and dissolve the unevenness and the warp in the annealing, a process of annealing said molded article under non-confinement, a process of cutting off said brim frame or said disk from said dial plate and a process of annealing said cut dial plate under confinement. Therefore, this invention may provide a light thin plastic dial plate instead of a heavy metallic plate for the meters and may cheaply mass-produce it.

3,767,754

METHOD FOR MELTING AND DISPERSION OF THERMOPLASTIC POLYMERS

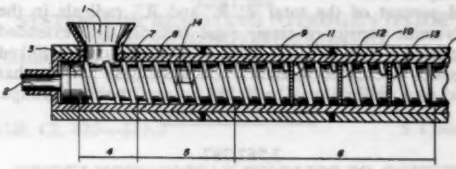
Donald P. Manning, Colonial Heights, Lloyd D. Caison, Hopewell, and Frank R. Jones, Chester, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Original application Nov. 15, 1968, Ser. No. 776,092, now Patent No. 3,596,320. Divided and this application Mar. 8, 1971, Ser. No. 122,120

Int. Cl. B28b *3/22*

U.S. Cl. 264—176 **6 Claims**

An improved method for uniformly mixing polymer materials and additives wherein one constituent may be a low viscosity component and the other a viscous polymer mixed by passage through an extruder having the overall length comprised of a feed zone 10–20 percent; a transition zone 27–40 percent and a metering zone of 45–60 percent. Within said metering zone there are 2–6 flight interruptions, said method of mixing polymers producing an extrudate with a coefficient of particle variation of less than 30 percent and said polyblends and low viscosity materials incorporated in polymers being both



suitable for piece dyeing when converted into textile articles.

3,767,755

PROCESS FOR PRODUCING BRILLIANT ACRYLIC FIBERS OF A NONCIRCULAR CROSS SECTION

Kenji Takeya and Kunio Tanashi, Okayama, Japan, assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 180,904, Sept. 15, 1971. This application Oct. 26, 1971, Ser. No. 192,308

Claims priority, application Japan, Nov. 26, 1970, 45/104,603

Int. Cl. B29h *21/54*; D01f *7/00*

U.S. Cl. 264—177 F **12 Claims**

Relates to making brilliant non-round acryonitrile polymer fibers having smooth surfaces by wet-spinning an inorganic solvent solution of a polymer of at least 85% acrylonitrile containing 5–15% of a di(lower alkyl)acrylamide or a di(lower alkyl)methacrylamide. Preferably, the wet gel fiber so produced is treated with acetone after water washing and prior to stretching.

3,767,756

DRY-JET WET SPINNING PROCESS

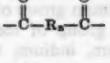
Herbert Blades, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

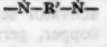
Continuation-in-part of application Ser. No. 239,377, Mar. 29, 1972, which is a continuation-in-part of application Ser. No. 172,515, Aug. 17, 1971, which in turn is a continuation-in-part of application Ser. No. 138,210, Apr. 28, 1971, all now abandoned. This application June 30, 1972, Ser. No. 268,052

Int. Cl. D01f *7/00*

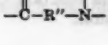
U.S. Cl. 264—184 **13 Claims**

The process of extruding a spinning dope from an orifice through a layer of fluid into a coagulating bath, said dope comprising a polyamide in a solvent consisting essentially of sulfuric acid of at least 98% concentration, chlorosulfuric acid or fluorosulfuric acid or mixtures thereof at a concentration (C) of at least 30 grams of said polyamide per 100 ml. of solvent, the said polyamide having an inherent viscosity of at least 2.0 but no less than [2.8—.05 (C—30)] and consisting essentially of recurring units selected from the group:

(I) 

(II) 

and

(III) 

wherein units I and II, if present in the polyamide, are present in substantially equimolar amounts, R, R' and R'' which may be the same or different, are divalent radicals, *n* may be zero or the integer one, and at least about 95 mol percent of the total R, R' and R'' radicals in the polyamide consist of single rigid radicals with extended bonds or a series of such rigid radicals which are linked together directly by extended bonds with the proviso that rigid ring radicals may be linked by azo or azoxy groups.

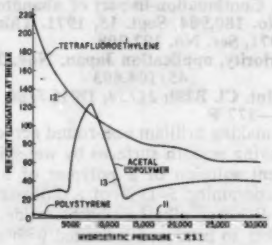
3,767,757
METHOD OF POLYMER FABRICATION UNDER HYDROSTATIC PRESSURE

Walter Irving Vroom, South Plainfield, and Robert Franklin Westover, Princeton, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of abandoned application Ser. No. 25,047, Apr. 2, 1970. This application Mar. 13, 1972, Ser. No. 234,027

Int. Cl. B29c *17/02*

U.S. Cl. 264—291 **9 Claims**



The production of many articles made from polymeric materials can be economically performed by mechanical cold forming operations. It is disclosed here that for many polymeric materials these operations can be facilitated by the application of hydrostatic pressure, typically in the 5,000 to 15,000 pound per square inch range. This is due to the discovery that, while under pressure, each of these polymeric materials possesses a ductility peak as great as a factor of five.

ERRATUM

For Class 264—313 see:
Patent No. 3,767,759

3,767,758
PROCESS FOR THE PREPARATION OF SALTS OF HYDROXYLAMINE

Pieter Mars, Enschede, Coenraad J. Duyverman, Sittard, and Martin J. Gorgels, Stein, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Continuation of abandoned application Ser. No. 783,728, Dec. 13, 1968. This application July 1, 1971, Ser. No. 159,063

Claims priority, application Netherlands, Dec. 14, 1967, 6717085

Int. Cl. C01b *21/00*

U.S. Cl. 423—302 **4 Claims**

Salts of hydroxylamine are prepared by reduction of nitric acid with hydrogen in an acid medium and a catalyst containing a metal from the platinum group of metals and an activator selected from the group of metals including copper, germanium, cadmium, indium, tin, gallium, silver, arsenic, thallium, antimony, gold, mercury, lead and bismuth. The reaction catalyst exhibits a high selectivity and conversion.

3,767,759
METHOD OF MOLDING CAPILLARY DRAIN FOR SURGERY

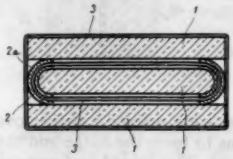
Otto Wichterle and Lubomír Krejčí, Prague Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Prague Czechoslovakia

Filed May 19, 1971, Ser. No. 144,806

Claims priority, application Czechoslovakia, May 27, 1970, 3,706/70

Int. Cl. B29c *1/08, 1/12*

U.S. Cl. 264—313 **7 Claims**



Method of molding a capillary drain consisting of a flat bundle of capillaries made from hydrogels and suitable particularly for treating glaucoma in ophthalmology wherein the drain is manufactured so that a system of parallel fibers or filaments is laid between parallel plates separated from each other by flat thin separating inserts or gaskets. An initiated monomer mixture suitable producing water-swellable cross-linked hydrogels is filled into the mold obtained and the monomer mixture is polymerized under cross-linking conditions. The mold is dismounted and the fibers or filaments are removed by dissolving or melting or pulling them out.

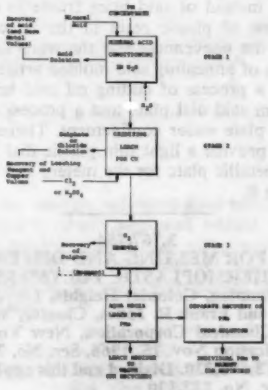
3,767,760
PROCESS FOR RECOVERY OF PRECIOUS METALS FROM COPPER-CONTAINING MATERIALS

Leif Reidar Hougen and Hans Zachariasen, Kristiansand, Norway, assignors to Falconbridge Nickel Mines Limited, Toronto, Ontario, Canada

Filed Dec. 13, 1971, Ser. No. 207,300

Int. Cl. C01g *55/00*

U.S. Cl. 423—22 **10 Claims**



A process for recovery of precious metal values from solid particles of sulphidic concentrates, mattes and the like containing copper is described. The process comprises, in part, the preferential leaching of copper from precious metals in the solids and the invention seeks to optimize the separation of copper from precious metals by conditioning the solids prior to preferential leaching of copper, by treating the solids as an agitated slurry in a mineral acid-bearing solution in the presence of hydrogen sulphide. Subsequent to the separation of copper

from precious metals, the process further comprises removing from the leached solids the elemental sulphur generated during leaching, dissolving precious metals from the remaining solids in aqua regia, and recovering precious metal values from the solution. An advantage of the process is that all of the precious metals are rendered soluble in the aqua regia leach.

3,767,761
METHOD FOR PRODUCING TUNGSTEN IN OXIDIC FORM FROM TUNGSTEN ORE

Ellis Kjell Ake Svanstrom, Nynashamn, Sweden, assignor to Rederiaktiebolaget Nordstjernan, Nynashamn, Sweden

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,255
Claims priority, application Sweden, Feb. 15, 1971, 1,871/71
Int. Cl. C01g *41/00*
U.S. Cl. 423—53 **4 Claims**

Tungsten is recovered in oxidic form from tungsten ores by reducing the ore at an elevated temperature with a reducing agent, thereby forming tungsten metal and a slag which is separated together with any other metal phases from the tungsten. The tungsten is solidified to an ingot and then crushed to form particulate tungsten metal, the tungsten being thereafter subjected to a digestion agent to convert tungsten to oxidic tungsten.

3,767,762
RECOVERY AND SEPARATION OF NICKEL AND COBALT FROM REDUCED LATERITE NICKEL ORE

Wasyl Kunda, Fort Saskatchewan, Alberta, Canada, assignor to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Continuation-in-part of abandoned application Ser. No. 103,110, Dec. 31, 1970. This application Jan. 4, 1972, Ser. No. 215,387
Int. Cl. C22b *3/00*
U.S. Cl. 423—145 **9 Claims**

The process of this invention involves the utilization of an aqueous ammoniacal solution of ammonium carbonate and ammonium sulphate to leach nickel and cobalt from lateritic or garnieritic ore which has been roasted under controlled conditions to selectively reduce contained nickel and cobalt to crude metallic form. Undissolved residue is separated from the leach solution and is reacted with free oxygen bearing gas to oxidize dissolved cobalt values to the cobaltic state and to convert unsaturated sulphur values to the sulphate form. The solution is then heated to a temperature above its boiling point to drive off free ammonia and substantially all carbon dioxide. The expelled ammonia and carbon dioxide gases are recycled to the leaching operation and the resulting substantially ammonium carbonate-free nickel and cobalt bearing ammoniacal ammonium sulphate solution is passed to nickel and cobalt recovery operations wherein these metals are recovered with concurrent production of a metals-depleted solution containing ammonium sulphate. This end solution is recycled to the leaching operation in amount sufficient to provide the ammonium sulphate requirements of that operation.

3,767,763
SEPARATION OF SODIUM COMPOUNDS

William M. Bunting, Baton Rouge, La., and Arthur M. Langer, Jr., Watchung, N.J., assignors to Esso Research and Engineering Company

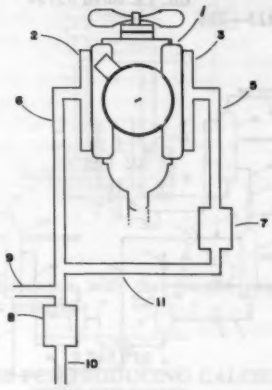
No Drawing. Continuation-in-part of applications Ser. No. 15,286, Feb. 27, 1970, and Ser. No. 58,660, July 27, 1970. This application Nov. 26, 1971, Ser. No. 202,646
Int. Cl. C01d *3/16*
U.S. Cl. 423—194 **8 Claims**

This invention relates to the use of aliphatic tertiary chelating polyamines for separating sodium compounds from either themselves or from potassium salts, rubidium salts, cesium salts, lithium salts having a lattice energy greater than about 220±10 kcal./mole or from Group II–A metal salts.

3,767,764
SYSTEM FOR REMOVING NITROGEN OXIDE FROM AUTOMOTIVE EXHAUST

Geoffrey E. Dolbear, Columbia, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Dec. 9, 1971, Ser. No. 206,376
Int. Cl. B01d *53/00*
U.S. Cl. 423—213.2 **5 Claims**

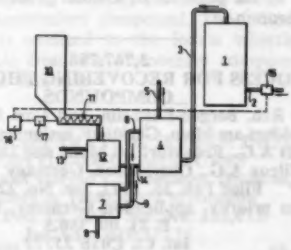


A process for removing carbon monoxide, hydrocarbons and nitrogen oxides from the exhaust stream of internal combustion engines by passing the exhaust gas through a catalyst for conversion of CO to carbon dioxide and nitrogen oxides to ammonia, followed by admixing the effluent from the catalyst with a second exhaust gas stream diluted with air, and passing this combined effluent through a second catalytic convertor, wherein the ammonia and nitrogen oxides react to form nitrogen, and the CO and hydrocarbons are converted to innocuous entities.

3,767,765
METHOD AND APPARATUS FOR CLEANSING FLUE GAS

Karl-Axel Göran Gustavsson and Jan Karl Lennart Smitt, Enkoping, Sweden, assignors to Aktiebolaget Bahco, Stockholm, Sweden

Continuation of application Ser. No. 749,546, Aug. 1, 1968. This application Dec. 11, 1970, Ser. No. 97,337
Claims priority, application Sweden, Oct. 17, 1967, 14,224/67
Int. Cl. B01d *53/34*
U.S. Cl. 423—220 **1 Claim**



A method and apparatus for cleansing flue gas from a furnace, according to which the flue gas is absorbed in

an alkaline absorption liquid comprising water to which the alkali is supplied at a controlled rate in response to the rate of fuel supply to the furnace.

3,767,766

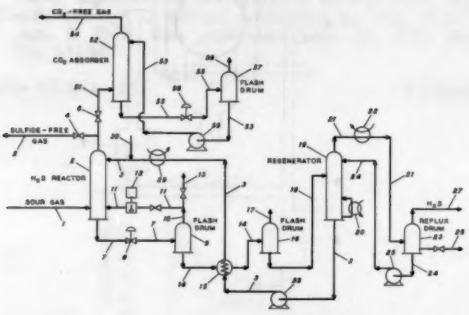
METHOD OF REMOVING GASEOUS SULFIDES FROM GASEOUS MIXTURES

Giok H. Tjoa, Placentia, and Karl H. Kilgren, La Habra, Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of abandoned application Ser. No. 851,874, Aug. 21, 1969. This application Feb. 22, 1971, Ser. No. 117,683

Int. Cl. B01d *53/34*

U.S. Cl. 423—220 **29 Claims**



The process for selectively removing H_2S and like sulfides from fluids containing them by contact with a substituted aromatic nitrile having an electron-attracting substituent on the aromatic ring at least as strong as halogen (e.g., isophthalonitrile) and an alkali hydrosulfide in a substantially hydroxyl-free solvent such as N-methyl-2-pyrrolidone. Preferably, in the process an admixture of H_2S and CO_2 in natural gas is contacted with the substituted aromatic nitrile containing contacting solution to react the H_2S with said nitrile, the CO_2 and/or like hydrocarbons are rejected from the contacting solution by mild heating and/or pressure reduction and thereafter H_2S is regenerated by heating the remaining solution.

3,767,767

INHIBITING CORROSION OF IRON BY BROMINE

Jack F. Mills, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 9, 1971, Ser. No. 170,376

Int. Cl. C01b *7/10*; C09k *3/00*; C23f *11/08*

U.S. Cl. 423—269 **9 Claims**

The corrosion of iron by bromine is substantially inhibited by the presence of a small proportion of chlorine in the bromine.

3,767,768

PROCESS FOR RECOVERING PHOSPHORUS COMPOUNDS

Lothar Reh, Bergen-Enkheim, and Carl-August Maelzer, Frankfurt am Main, Germany, assignors to Metallgesellschaft A.G., Frankfurt am Main, and Deutsche Babcock & Wilcox A.G., Oberhausen, Germany

Filed Feb. 25, 1972, Ser. No. 229,280

Claims priority, application Germany, Feb. 27, 1971, P 21 09 350.5

Int. Cl. C01b *25/12*

U.S. Cl. 423—304 **12 Claims**

A process for obtaining phosphorus compounds, especially phosphorus pentoxide, wherein the crude phosphorus-containing substances are introduced tangentially or along a secant into a cyclone furnace together with oxygen-containing gas, silicon-containing and carbon-containing materials to react and form the phosphorus pentoxide. The reaction is carried out at a temperature of at least 1500° C. while the wall of the cyclone is cooled by evaporation of water against a pressure of at least 20 kg./cm.^{2} above atmospheric so that a protective continuously renewing film is formed along the cyclone wall.

3,767,769

EXTRACTION OF PHOSPHORIC ACID AT SALINE SOLUTIONS STATE

Louis M. Winand, Ris-Orangis, and Jean R. Goret, Paris, France, assignors to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France, and UCB (Union Chimique-Chemische Bedrijven), Saint-Gilles, les Brussels, Belgium, fractional part interest to each

Continuation of abandoned application Ser. No. 779,452, Nov. 27, 1968. This application July 7, 1971, Ser. No. 160,508

Claims priority, application France, Nov. 30, 1967, 130,359

Int. Cl. C01b *15/16, 25/26*

U.S. Cl. 423—309 **11 Claims**

A continuous process for extracting alkali phosphates as concentrated, pure solutions derived from the acidic attack on natural rock comprising in that in a first series of countercurrent flow extractors impure solutions of phosphoric acid are treated with a solvent while a strong acid is introduced at one or more points in the first series of extractors, extracting the solution of phosphoric acid in said solvent in countercurrent flow with aqueous solutions containing phosphate ions and alkali ions within a second series of countercurrent flow extractors, first washing and partially extracting the solution of phosphoric acid in said solvent with a stream of pure water in a third series of countercurrent flow extractors, adding the water stream loaded with phosphoric acid to the starting impure solutions of phosphoric acid in the first series of extractors, recycling the solvent leaving the second series of extractors to the first series of extractors, collecting exhausted solutions of phosphoric acid containing the strong acid which has been added at the outlet of the first series of extractors, and collecting pure alkali phosphates as concentrated solutions at the outlet of the second series of extractors.

3,767,770

METHOD OF MANUFACTURE OF POTASSIUM PHOSPHATE

Ralph Eric Worthington, William Henry Thompson, and Thomas Noel Enda Somers, Dublin, Ireland, and Erhart K. Drechsel, Houston, Tex.; said Worthington, Thompson and Somers assignors to Fitzwilton, Limited, Dublin, Ireland, and said Drechsel assignor to Pennzoil Company, Shreveport, La.

Filed Dec. 7, 1971, Ser. No. 205,613

Int. Cl. C01b *15/16, 25/26*

U.S. Cl. 423—309 **7 Claims**

There is disclosed a process for the production of potassium dihydrogen phosphate by the reaction of potassium chloride with phosphoric acid which has preferably been concentrated and dehydrated at elevated temperatures, to form a reaction mixture containing potassium phosphate compounds, hydrolyzing the resulting reaction mixture with water, or with aqueous phosphoric acid and precipitating the resultant potassium dihydrogen phosphate product by the addition of an organic liquid.

3,767,771
PREPARATION OF FAUJASITE-TYPE ZEOLITES
Jean-Louis Guth, Toulouse, Albert Pereyron, Brunstatt, and Raymond Wey, Mulhouse, France, assignors to Azote et Produits Chimiques S.A., Paris, France
No Drawing. Filed Sept. 8, 1971, Ser. No. 178,794
Claims priority, application France, Sept. 8, 1970, 7032513
Int. Cl. C01b *33/28*
U.S. Cl. 423—329 8 Claims

Crystalline zeolites of the faujasite-type containing Na^+ and K^+ cations are produced by a process wherein a gel containing all of the necessary alumina is prepared, amorphous silica is added to the gel in an amount of at least 0.5 mole of amorphous silica per mole of alumina, and the resultant mixture crystallized. The zeolite products have a high SiO_2/Al_2O_3 ratio and excellent thermal stability and can be used as molecular sieves and catalyst supports.

3,767,772
PROCESS FOR PREPARING NITROGEN MONOXIDE
John W. Geus and Adriaan P. P. Nobel, Geleen, Joseph J. F. Scholten, Sittard, and Wilhelmus G. Scheijen, Urmond, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands
No Drawing. Filed Oct. 18, 1971, Ser. No. 190,366
Claims priority, application Netherlands, Oct. 23, 1970, 7015516
Int. Cl. C01b *21/26*
U.S. Cl. 423—404 3 Claims

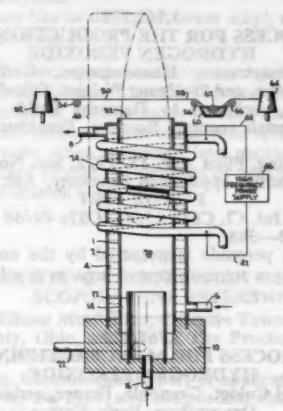
An improved process for the preparation of nitrogen monoxide from ammonia and molecular oxygen at an elevated temperature in the presence of a catalyst system containing cobalt oxide is disclosed wherein the efficiency of the catalyst is periodically restored by intermittently decreasing the ammonia content of the gas mixture supplied to the reactor by from one to ten percent by volume, each intermittent reduction lasting from about one to about ten minutes.

3,767,773
METHOD OF MANUFACTURING CARBON ARTICLES
William Neil Turner, Mickleover, and Frank Charles Johnson, Babbington, near Eastwood, England, assignors to The Secretary of State for Defence, London, England
Filed Oct. 30, 1970, Ser. No. 85,486
Int. Cl. C01b *31/02, 31/67*
U.S. Cl. 423—447 6 Claims

A method of manufacturing a carbon article comprises treating an article made of an acrylic material with a solution containing free hydroxylamine and subsequently pyrolysing the treated article. The invention is particularly useful in the production of carbon fibres.

3,767,774
SURFACE TREATMENT OF PREVIOUSLY GRAPHITIZED CARBONACEOUS FIBERS
Kenneth C. Hou, Whippany, N.J., assignor to Celanese Corporation, New York, N.Y.
Filed Aug. 12, 1971, Ser. No. 171,233
Int. Cl. C01b *31/07*
U.S. Cl. 423—447 10 Claims

An improved process is provided for modifying the surface characteristics of a predominantly graphitic carbonaceous fibrous material thereby to facilitate enhanced adhesion between the fibrous material and a matrix material. The fibrous material is continuously passed for an exteremely brief residence time transversely through the tip of an inert gas thermal plasma present in an open atmosphere. Composite articles of enhanced interlaminar shear strength may be formed by incorporating the fibers



modified in accordance with the present process in a resinous matrix material.

3,767,775
PROCESS FOR PRODUCING CALCIUM HYPOCHLORITE
Seiji Tatara, Tokyo, Yasuo Morita, Yoshiki Doomori, and Masasi Kumoda, Niigata-ken, Yoshikazu Iwaki, Takada, and Teruyuki Fujishima, Niigata-ken, Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan
No Drawing. Filed Nov. 18, 1971, Ser. No. 200,226
Claims priority, application Japan, Nov. 20, 1970, 45/101,927; Nov. 24, 1970, 45/102,720
Int. Cl. C01b *11/00;* C01d *3/04;* C01f *11/00*
U.S. Cl. 423—474 5 Claims

Equal weight parts of sodium hydroxide, calcium hydroxide and water are added to mother liquor which is already pregnant with sodium chloride and calcium hypochlorite. Chlorine gas is introduced into this mixture under agitation. This will produce small size crystals of calcium hypochlorite and large size crystals of sodium chloride which can then be readily separated because of this size difference.

3,767,776
PROCESS FOR THE RECOVERY OF IODINE
James Lewis Bradford, Oklahoma City, Okla., assignor to Kerr-McGee Chemical Corp., Oklahoma City, Okla.
No Drawing. Filed Nov. 9, 1971, Ser. No. 197,135
Int. Cl. C01b *11/12*
U.S. Cl. 423—475 7 Claims

An anion exchange process in which an aqueous alkaline brine containing iodine is contacted with a quaternary ammonium compound whereby the iodine forms a complex with the ammonium compound. The iodine in the complex then is oxidized to the iodate whereby it is readily strippable from the ammonium compound with an aqueous salt solution.

3,767,777
METHOD OF SEPARATING SULFUR DIOXIDE FROM GASEOUS MIXTURES
Elroy E. Frye and Harold L. Trentham, Houston, Tex., assignors to Trentham Corporation
Filed Feb. 23, 1972, Ser. No. 228,612
Int. Cl. C01b *17/56*
U.S. Cl. 423—575 10 Claims

Sulfur dioxide is preferentially absorbed from a gaseous mixture containing sulfur dioxide by intimate, countercurrent contact between the gas stream and a solution

containing a water soluble trialkyl phosphate. A concentrated stream of sulfur dioxide is obtained by regeneration of the absorbing solution.

3,767,778
PROCESS FOR THE PRODUCTION OF HYDROGEN PEROXIDE

Gunter Glesselmann, Heusenstamm, Gerd Schreyer, Grossauheim, and Wolfgang Weigert, Offenbach (Main), Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

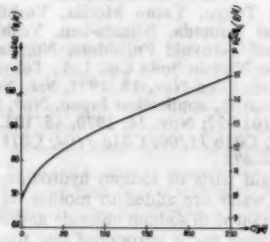
No Drawing. Filed Apr. 12, 1971, Ser. No. 133,390
Claims priority, application Germany, Apr. 18, 1970, P 20 18 686.1
Int. Cl. C01b *15/02*; C07c *49/68*
U.S. Cl. 423—588 17 Claims

Hydrogen peroxide is prepared by the anthraquinone process using a tetrasubstituted urea as a solvent for the reaction carrier.

3,767,779
PROCESS FOR MANUFACTURING HYDROGEN PEROXIDE

Michel Coingt, Grenoble, France, assignor to Oxysynthese, Paris, France

Continuation-in-part of abandoned application Ser. No. 645,736, June 13, 1967. This application July 6, 1971, Ser. No. 160,121
Int. Cl. C01b *15/02*; C07c *49/68*
U.S. Cl. 423—588 6 Claims



A working solution of quinone and tetrahydroquinone dissolved in an organic solvent is subjected to hydrogenation-oxidation reactions and the hydrogen peroxide formed in each oxidation stage is removed, and the working solution is recycled, the rate of hydrogenation preferably being at least 80% of the theoretical maximum and the tetrahydroquinone preferably forming the major part of the quinone and tetrahydroquinone, wherein the working solution contains not less than 150 g. per litre of degraded substances.

3,767,780
PREPARATION OF MANGANESE OXIDES

Michael Bellas, Wigan, and William L. Seddon, Sale, England, assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Feb. 3, 1972, Ser. No. 223,362
Int. Cl. C01g *45/02*
U.S. Cl. 423—605 7 Claims

A process for preparing manganic-manganous oxide (Mn_3O_4) by the oxidation in water of manganous hydroxide at elevated temperature and superatmospheric pressure. The water can contain ammonia, acetic acid, or ammonium acetate. The temperature can be between about 100 C. and about 140° C., and the pressure can be between about 40 and 70 p.s.i. Air or oxygen can be used as the oxidizing agent, and the suspension of manganous hydroxide in water or aqueous solution can be agitated during treatment. The resulting manganic manganous oxide can be recovered as filter cake after filtration of the reaction mixture.

3,767,781
PROCESS FOR PREPARING NON-SOLVATED ALUMINUM HYDRIDE

Theodore C. Kraus, Cheshire, James A. Scruggs, West Haven, and Samuel I. Trotz, Mount Carmel, Conn., assignors to Olin Mathieson Chemical Corporation

No Drawing. Filed Mar. 2, 1962, Ser. No. 177,703
Int. Cl. C01b *6/00*
U.S. Cl. 423—645 6 Claims

1. A process for the preparation of non-solvated aluminum hydride which comprises (A) reacting hydrogen chloride with an excess of an alkali metal aluminum hydride of the formula:

$$MAlH_4$$

wherein M is an alkali metal selected from the group consisting of lithium, sodium and potassium and in the presence of a lower dialkyl ether of the formula:

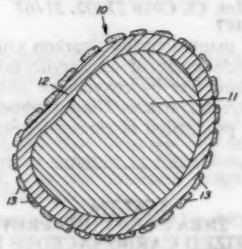
$$R_1OR_2$$

wherein R_1 and R_2 are alkyl radicals having from 1 to 5 carbon atoms, the molar ratio of the said hydrogen chloride reacted with the said alkali metal aluminum hydride being within the range of from about 0.95 to about 0.33, (B) separating liquid and solid phases of the resulting reaction mixture, (C) recovering from the liquid phase a solvated aluminum hydride product containing the unreacted alkali metal aluminum hydride (D) heating the said solvated aluminum hydride product at a temperature of from about 20° C. to about 150° C. and for a period of time sufficient to remove the lower dialkyl ether associated with the aluminum hydride whereby a non-solvated aluminum hydride product containing the unreacted alkali metal aluminum hydride is obtained and (E) recovering the non-solvated aluminum hydride.

3,767,782
SELF-DESTRUCTING PESTICIDAL FORMULATIONS AND METHODS FOR THEIR USE

Keith H. Sweeny, West Covina, and James R. Fischer, Claremont, Calif., assignors to the United States of America as represented by the Secretary of the Interior

Filed Dec. 23, 1970, Ser. No. 100,984
Int. Cl. A61k *9/00*
U.S. Cl. 424—2 8 Claims



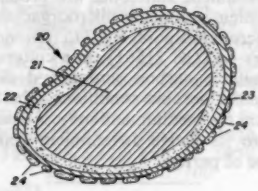
Normally persistent pesticides, such as DDT, are formulated as small particles having a reactive metal or metallic-couple central core, an intermediate layer of elemental sulfur and an exterior coating of pesticide. The sulfur layer temporarily isolates the metallic core from the pesticide but after exposure to a field environment reacts with oxygen and water to provide a localized acidic environment for the reaction of pesticide with metal.

3,767,783

SELF-DESTRUCTING PESTICIDAL FORMULATIONS AND METHODS FOR THEIR USE

Keith H. Sweeny, West Covina, James R. Fischer, Claremont, Charles A. Lung, Buena Park, and Elmer M. Wilson, Pasadena, Calif., assignors to the United States of America as represented by the Secretary of the Interior

Filed Dec. 23, 1970, Ser. No. 100,985
Int. Cl. A61k *9/00*
U.S. Cl. 424—2 8 Claims



Normally persistent pesticides such as DDT are formulated as small particles with a reactive metal or metallic couple and an acid-producing agent. Means are provided to maintain the pesticide in isolation from the reactants for a predetermined length of time after field application. Thereafter, the reactants are allowed to contact the pesticide resulting in its degradation to less harmful compounds.

3,767,784

COMPOSITION FOR THE PROTECTION AND TREATMENT OF INJURED BODY TISSUE AND METHOD OF UTILIZING THE SAME

Seymour M. Gluck, 395 Barrett Road, Cedarhurst, N.Y. 11516

No Drawing. Filed Dec. 1, 1970, Ser. No. 94,190
Int. Cl. A61f *13/00*
U.S. Cl. 424—28 4 Claims

Gel-forming substances are used to set and stabilize aerated carbohydrate solutions to form a soft, resilient and stable composition of therapeutic value in the healing of injured body tissues.

The composition is soluble in the body fluids and may be dissolved therein within any predetermined period. By varying the proportions of the principal ingredients or by the addition of suitable modifiers and/or medicaments the rate of dissolution may be altered and the therapeutic properties of the composition may be varied as circumstances may require.

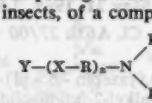
3,767,785

INSECT REPELLENT ARTICLES

Carl Bordenca, Ponte Vedra Beach, and John M. Derfer, Jacksonville, Fla., assignors to SCM Corporation, Cleveland, Ohio

Continuation-in-part of application Ser. No. 753,031, July 26, 1968, now Patent No. 3,644,645, which is a division of application Ser. No. 607,876, Jan. 9, 1967, now Patent No. 3,446,843, which in turn is a continuation-in-part of abandoned application Ser. No. 479,009, Aug. 11, 1965. This application July 3, 1969, Ser. No. 838,897
Int. Cl. A61k *9/00*
U.S. Cl. 424—29 9 Claims

A novel article comprising a web containing a quantity, sufficient to repel insects, of a compound of the formula:



where

Y is a monovalent organic radical,
X is sulfur or oxygen,
R is lower alkylene,
R' and R'' are like or dissimilar lower alkyl, and
n is an integer from 1 to 3,

is described. Packaging containers comprising and/or fabricated from these articles are also described.

The invention is advantageous in that the articles exhibit repellent properties toward a wide spectrum of insects. The webs when converted into packages or components thereof protect the contents of packages from invasion or infestation by insect pests.

3,767,786

INHIBITING PERSPIRATION WITH SCOPOLAMINE ESTERS

Francis S. Kilmer MacMillan, Colerain Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation-in-part of application Ser. No. 31,804, May 26, 1960, now abandoned. This application Apr. 20, 1961, Ser. No. 104,262
Int. Cl. A61k *7/00*
U.S. Cl. 424—65 4 Claims

Antiperspirant compositions and methods based on certain anticholinergic scopolamine esters as active ingredients.

3,767,787

RETARDED VAPORIZATION COMPOSITIONS AND METHOD FOR MAKING

Herbert A. Segal, Huntingdon Valley, Pa. (Ashton Hall, 2109 Red Lion Road, Philadelphia, Pa. 19115)

No Drawing. Continuation-in-part of abandoned application Ser. No. 840,828, July 10, 1969. This application Oct. 7, 1971, Ser. No. 187,356
Int. Cl. A61l *13/00;* B01j *13/00*
U.S. Cl. 424—76 10 Claims

Retarded vaporization compositions are provided consisting essentially of a non-aqueous colloidal system containing finely divided fumed amorphous silica, a gelatinizing agent, a nonpolar odoriferious material which is not miscible with water, and a liquid hydroxy compound, which composition upon contact with water releases the odoriferous material. In a preferred embodiment, the compositions may also include a bactericidal agent which is also released upon contact with water. The method of preparing the aforesaid retarded vaporization compositions includes the blending of the components and their subsequent curing for one-quarter hour to eight hours at a temperature within the range of about 110° F. to 160° F.

3,767,788

OPHTHALMIC SOLUTION

Billy F. Rankin, Rockville, Md., assignor to Burton Parsons Chemicals Inc., Washington, D.C.

No Drawing. Continuation-in-part of applications Ser. No. 773,947, Nov. 6, 1968, and Ser. No. 881,336, Dec. 1, 1969. This application June 8, 1970, Ser. No. 44,564
Int. Cl. A61k *15/00*
U.S. Cl. 424—78 19 Claims

An ophthalmic solution is provided for treatment of "dry eye," providing lubricating and cushioning effects for traumatized eyes, including trauma caused by the wearing of hard or gel-type contact lenses, and as a carrier for ophthalmic medicaments. The solution is an aqueous solution of polyethylene oxide, optionally polyethylene glycol, and other optional ingredients.

3,767,789

METHOD OF PROVIDING A SYNTHETIC MUCUS IN VIVO

Billy F. Rankin, Rockville, Md., assignor to Burton, Parsons & Company, Inc., Washington, D.C.

No Drawing. Continuation-in-part of application Ser. No. 44,564, June 8, 1970, which is a continuation-in-part of abandoned application Ser. No. 773,947, Nov. 6, 1968, which in turn is a continuation-in-part of abandoned application Ser. No. 881,336, Dec. 1, 1969. This application June 21, 1971, Ser. No. 155,260

Int. Cl. A61k *15/00, 27/08*

U.S. Cl. 424—78 7 Claims

A synthetic mucus is applied to mucus membranes by forming an aqueous solution of about .05 to 10 weight percent of a polyethylene oxide having a molecular weight of at least about 100,000.

3,767,790

MICROORGANISMS

Alvin Guttag, Bethesda, Md., assignor to National Patent Development Corporation, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 832,938, June 13, 1969. This application Feb. 11, 1972, Ser. No. 225,488

Int. Cl. A61k *23/00;* C12k *1/10*

U.S. Cl. 424—81 25 Claims

Microorganisms are entrapped in a hydrophilic acrylate or methacrylate to provide controlled release or quick release or to provide a regulated time of contact with an environment on which the microorganisms can act.

3,767,791

DENTAL CREAM CONTAINING ABRASIVE AGGLOMERATES

Martin Cordon, Highland Park, and Brian J. Pintenich, Piscataway, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed June 3, 1971, Ser. No. 149,786

Int. Cl. A61k *7/16*

U.S. Cl. 424—49 7 Claims

Abrasive agglomerates and a method for making same is disclosed herein. The abrasive agglomerates comprise a plurality of particles of a mineral like hard abrasive substance held together in agglomerate form by a thermoplastic binding resin. The new agglomerates are very suitable for incorporation into various dental cream formulations to provide improved polishing characteristics and an attractive appearance.

3,767,792

METHOD FOR CONTROLLING THE TOXICITY OF DRUG PRODUCTS

Elton S. Cook, Cincinnati, Ohio, and Leo G. Nutini, Burlington, Ky., assignors to Stanley Drug Products, Inc., Portland, Oreg.

No Drawing. Continuation-in-part of application Ser. No. 825,068, May 15, 1969, which is a continuation-in-part of application Ser. No. 530,413, Feb. 28, 1966, both now abandoned. This application July 2, 1971, Ser. No. 159,465

Int. Cl. A61k *27/00*

U.S. Cl. 424—95 4 Claims

A substance and method for treating animal organisms wherein a non-topical drug preparation for internal use and a stimulating factor for cellular respiration are introduced into the bloodstream of the organism being treated.

3,767,793

JUVENIMICIN AND PRODUCTION THEREOF

Motoo Shibata and Kazunori Hatano, Osaka, Eiji Higashide, Hyogo, Hideo Yamana, Osaka, and Toyokazu Kishi, Nara, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed July 10, 1970, Ser. No. 53,736

Claims priority, application Japan, July 11, 1969, 44/55,201

Int. Cl. A61k *21/00*

U.S. Cl. 424—122 5 Claims

Novel Juvenimicin antibiotics are produced by culturing a Juvenimicin-producing microorganism belonging to the genus Micromonospora, e.g. *Micromonospora chalcea* var. *izumensis* (ATCC 21561), in a culture medium containing assimilable carbon source and digestible nitrogen source under aerobic conditions. The Juvenimicin is separated from the medium and may, if desired, be further separated into its active Juvenimicin components to a desired degree of purity.

3,767,794

ANTIFOAM PREPARATIONS AND METHOD OF PREPARING SAME

Duncan E. McVean and Paul A. Tuerck, Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,943

Int. Cl. A61k *27/00*

U.S. Cl. 424—157 6 Claims

An antifoaming product, which retains its antifoaming activity in the presence of anti-acids and other drugs, is prepared by suspending up to 20% by weight of an antifoaming organo-polysiloxane, such as simethicone, in molten sorbitol, cooling the suspension to harden it and thereafter reducing it to a powder of a particle size larger than about 115 mesh. The new antifoaming compositions may be used in therapeutically active amounts in the preparation of compositions for the relief of gastrointestinal distress caused by flatulency.

3,767,795

METHOD FOR COMBATING CERTAIN VIRUS INFECTION

Joseph Bernard Schleicher, Lake Bluff, and William R. Roderick, Libertyville, Ill., assignors to Abbott Laboratories, Chicago, Ill.

No Drawing. Filed Feb. 25, 1971, Ser. No. 119,056

Int. Cl. A61k *27/00*

U.S. Cl. 424—212 2 Claims

A method of preventing or treating herpes virus infections in animals by administering phosphonoacetic acid or its salts.

3,767,796

IMIDAZOLIDINONE DERIVATIVES IN CONTROLLING PSYCHOSOMATIC DISTURBANCES

Walter Schindler, Riehen, Basel-Stadt, and Erich Schmid, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Mar. 26, 1970, Ser. No. 24,392, now Patent No. 3,646,037, dated Feb. 29, 1972. Divided and this application Sept. 20, 1971, Ser. No. 182,214

Claims priority, application Switzerland, Mar. 28, 1969, 4,799/69; May 21, 1969, 7,693/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 9 Claims

1-[4 [3-[dibenz[b,f]azepin - 5 - yl]-2-methyl-propyl]-1-piperazinyl-alkyl]-3-alkyl-2-imidazolidinone derivatives

and the pharmaceutically acceptable acid addition salts thereof are useful for the treatment of psychosomatic disturbances; an illustrative embodiment is 1-[2-[4-[3-(5H-dibenz[b,f]azepin-5-yl) - 2-methyl-propyl]-1-piperazinyl]-ethyl]-3-methyl-2-imidazolidinone.

3,767,797

NOVEL QUINAZOLINONE DERIVATIVES AS ANTI-INFLAMMATORY AND ANALGESIC AGENTS

Shigeho Inaba, Takarazuka, Michihiro Yamamoto, Toyonaka, Kikuo Ishizumi, Minoo, Kazuo Mori, Kobe, and Hisao Yamamoto, Nishinomiya, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

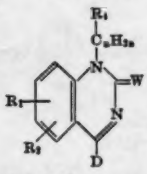
No Drawing. Original application July 29, 1970, Ser. No. 59,337, now Patent No. 3,712,892. Divided and this application Oct. 13, 1972, Ser. No. 297,294

Claims priority, application Japan, Aug. 2, 1969, 44/61,222; Aug. 4, 1969, 44/61,872; Sept. 4, 1969, 44/70,453; Dec. 8, 1969, 44/98,836; Dec. 8, 1969, 44/99,196, 44/102,810; Jan. 23, 1970, 45/6,531; Jan. 24, 1970, 45/6,628; Feb. 17, 1970, 45/14,069

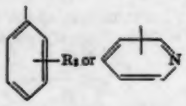
Int. Cl. A61k *27/00*

U.S. Cl. 424—251 **1 Claim**

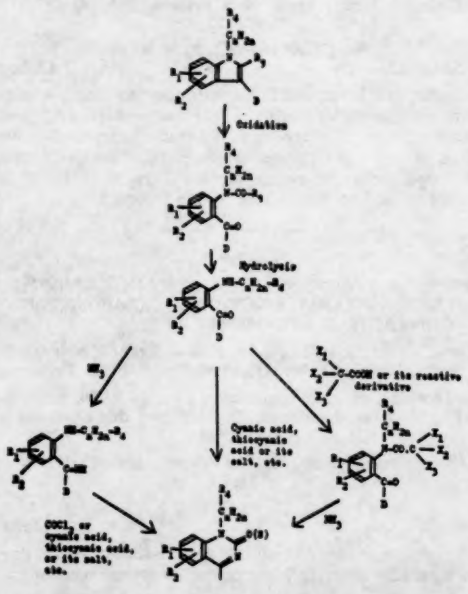
Novel quinazoline derivatives, which are useful as medicines, of the formula,

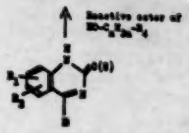


wherein D is a group of the formula,



n is 0 or an integer of 1 to 3; R_1, R_2 and R_3 each is hydrogen, halogen, C_{1-4} alkyl, C_{1-4} alkoxy, nitro, trifluoromethyl, etc.; R_4 is C_{3-6} cycloalkyl; and W is oxygen or sulfur. These quinazoline derivatives are produced by any of reactions as shown in the following reaction scheme;


Oxidation
Hydrolysis
Cyanic acid, thiocyanic acid or its salt, etc.
or its reactive derivative
or cyanic acid, thiocyanic acid, or its salt, etc.



wherein D, *n*, R_1, R_2, $_4$ and W are the same as defined above, and R_5 is C_{1-4} alkoxy-carbonyl, carboxy, carbamoyl or cyano.

3,767,798

ACYLOXYMETHYL DERIVATIVES OF PHENOBARBITAL AND BARBITAL IN TREATING CONVULSIONS

Julius A. Vida, Boston, Mass., assignor to Kendall Company, Walpole, Mass.

No Drawing. Original applications Ser. No. 749,973, Aug. 5, 1968, now Patent No. 3,595,862, and Ser. No. 68,498, Aug. 31, 1970, now abandoned. Divided and this application Aug. 2, 1972, Ser. No. 277,466

Int. Cl. A61k *27/00*

U.S. Cl. 424—254 **3 Claims**

N,N' - bis(acyloxymethyl) phenobarbital, N,N' - bis-(acyloxymethyl) barbital, 3 - acyloxymethyl diphenylhydantoin, and N,N' - diacyloxy diphenylhydantoin compounds are described as well as therapeutic compositions containing them and their use as anticonvulsant agents.

3,767,799

ANTIBIOTIC PROTICIN

László Vértesy, Kelkheim, Taunus, Paul Präve, Neuenhain, Taunus, and Dieter Sukatsch, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed July 16, 1971, Ser. No. 163,361

Claims priority, application Germany, July 18, 1970, P 20 35 812.7

Int. Cl. A61k *21/00*

U.S. Cl. 424—122 **3 Claims**

An antibiotic, active against Gram-positive and Gram-negative bacteria and mycobacteria, the sodium salt of which antibiotic has the formula $C_{31}H_{44}O_7PNa$, has an ultra-violet spectrum showing maxima at 284, 275.5, 264, and 235 nanometers, and has an infrared spectrum showing peaks at 3400, 3080, 2920, 2820, 1725, 1640, 1445, 1370, 1160, 985, 890, and 750 $cm.^{-1}$. Process for preparing said antibiotic by cultivation of *Bacillus licheniformis* var. *mesentericus*.

3,767,800

SUBSTITUTED RIBOFURANOSIDES AS HYPOLIPIDEMICS

Mario G. Buzzolini, Morristown, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed Feb. 7, 1972, Ser. No. 224,325

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **11 Claims**

Certain ribofuranosides, e.g., methyl 5-(6-amino-3H-purin-9-yl)-5-deoxy-2,3-O-isopropylidene ribofuranoside, are useful as hypolipidemic agents.

3,767,801

SUPPOSITORY COMPOSITIONS AND PROCESS FOR THE PREPARATION THEREOF

Rudolf Tuma and Rotraud Lebender, Witten (Ruhr), Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Filed Jan. 27, 1971, Ser. No. 110,281

Claims priority, application Germany, Jan. 30, 1970, P 20 04 098.6

Int. Cl. A61k *9/02*; C11c *3/02*

U.S. Cl. 424—230 **24 Claims**

Suppository compositions having a melting point of less than 37° C. are prepared by esterifying glycerin with

a fatty acid mixture melting at 31–36° C. and consisting essentially of 70–82% by weight of lauric acid, 6–22% by weight of myristic acid and 6–22% by weight of palmitic acid. The resulting masses are non-brittle, substantially free from partial esters and essentially inert to additives, such as aspirin.

3,767,802

SUBSTITUTED ESTERS OF PHENYL ACETIC ACIDS IN TREATING PAIN AND INFLAMMATION

Rolf Denss, Schutzenmattstr. 43, Basel, Switzerland; Niels Clauson-Kaas, Rugmarken 28, Farum, Denmark; and Franz Ostermayer, Am Hang 5, Riehen, Switzerland

No Drawing. Original application Apr. 22, 1969, Ser. No. 818,408, now Patent No. 3,697,460. Divided and this application Sept. 22, 1971, Ser. No. 182,855

Claims priority, application Switzerland, Apr. 29, 1968, 6,377/68

Int. Cl. A61k *27/00*

U.S. Cl. 424—244 3 Claims

Substituted [p-(1-pyrryl)-phenyl]-acetic acid aminoalkyl esters and pharmaceutically acceptable acid addition salts thereof have analgesic and anti-inflammatory activity; the compounds are active ingredients of pharmaceutical compositions and are useful for alleviating pain and treating inflammatory diseases in mammals; an illustrative embodiment is [p-(1-pyrryl)-phenyl]-acetic acid [3-(1-pyrrolidinyl)-propyl]-ester.

3,767,803

STABLE AQUEOUS PYRITINOL SOLUTIONS

Eberhard Nürnberg, Darmstadt, Germany, assignor to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

No Drawing. Filed Sept. 24, 1971, Ser. No. 183,641

Claims priority, application Germany, Sept. 26, 1970, P 20 47 486.6

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 8 Claims

Aqueous solutions of bis[3-hydroxy-4-hydroxymethyl-2-methyl-pyridyl-(5)-methyl]-disulfide (pyritinol) are stabilized by a mixture of (a) a physiologically acceptable acid of 1–6 carbon atoms and (b) vitamin B_1, vitamin B_6, diethanolamine, 1-benzyl-3-ethyl-6,7-dimethoxyisoquinoline, nicotinic acid amide or other physiologically acceptable base.

3,767,804

METHOD OF COMBATTING MALARIA

Willy Burkard, Reinach, Alfred Rheiner, Jr., Basel, and Rolf Richle, Mohlin, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed July 21, 1971, Ser. No. 164,936

Int. Cl. A61k *27/00*

U.S. Cl. 424—270 4 Claims

Pharmaceutical compositions useful as antimalarials which contain as the active ingredient a compound selected from the group consisting of 1,1-diethyl-3-(2-thiazolyl)-2-thiourea, 1-methyl-3-(2-thiazolyl)-2-thiourea, 1,1-dimethyl-3-(4-methyl-2-thiazolyl)-2-thiourea and acid addition salts thereof.

3,767,805

TERTIARY AMINOACIDS IN ANTI-INFLAMMATORY COMPOSITIONS

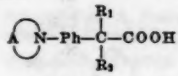
Richard William James Carney, New Providence, and George de Stevens, Woodland Park, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 40,436, May 25, 1970, which is a continuation-in-part of application Ser. No. 8,406, Feb. 3, 1970, which is a continuation-in-part of abandoned application Ser. No. 856,154, Sept. 8, 1969, which is a continuation-in-part of application Ser. No. 843,244, July 18, 1969, now Patent No. 3,641,040, which is a continuation-in-part of abandoned application Ser. No. 808,343, Mar. 18, 1969, which is a continuation-in-part of abandoned application Ser. No. 790,863, Jan. 13, 1969, which is a continuation-in-part of application Ser. No. 757,136, Sept. 3, 1968, now Patent No. 3,657,230, which in turn is a continuation-in-part of abandoned application Ser. No. 716,347, Mar. 27, 1968. This application Sept. 17, 1971, Ser. No. 181,564

Int. Cl. A61k *27/00*

U.S. Cl. 424—274 5 Claims

New α-(cyclic tert. aminophenyl)-aliphatic acids, e.g. those of the formula



R_1=H or alkyl,

Ph=a phenylene radical,

R_2=H, alk(en)yl, cycloalk(en)yl or cycloalk(en)yl-alkyl

mono- or bicyclic alkenyleneimino with 1–3 double bonds and functional derivatives thereof, are anti-inflammatory agents.

3,767,806

SYNERGISTIC INSECTICIDES

Francois Rauch, Marseille, France, assignor to Roussel-UCLAF, Paris, France

No Drawing. Filed Jan. 20, 1971, Ser. No. 108,187

Claims priority, application France, Feb. 4, 1970, 7003912

Int. Cl. A01n *9/02, 9/24, 9/28*

U.S. Cl. 424—278 2 Claims

Synergistic insecticidal compositions containing a mixture of allethrolone d-trans chrysanthemate (A) and either 5-benzyl-3-furyl-methyl-d-trans chrysanthemate (B) or 5-benzyl-3-furyl-methyl dl-cis-trans chrysanthemate (C) optionally containing piperonyl butoxide or other synergists and to methods of killing insects.

3,767,807

PROCESS FOR THE PRODUCTION OF LYOPHILIZED PHARMACEUTICAL COMPOSITIONS CONTAINING VITAMIN C

Pierre Blonde, Saint-Maur-des-Fosses, France, assignor to Societe Anonyme dite: ORSYMONDE, Paris, France

No Drawing. Original application Apr. 14, 1970, Ser. No. 28,550, now abandoned. Divided and this application Nov. 15, 1971, Ser. No. 198,996

Claims priority, application France, Apr. 15, 1969, 6911589

Int. Cl. A61k *15/12*

U.S. Cl. 424—280 1 Claim

Lyophilized pharmaceutical compositions which dissolve rapidly in water while having improved mechanical

strength and resistance to atmospheric moisture are made by lyophilizing vitamin C in admixture with lyophilization adjuvants such as glycine, gum arabic and a block copolymer.

3,767,808

OXIMECARBAMATE PESTICIDAL COMPOSITIONS AND THEIR USE

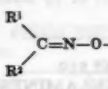
Roger Williams Addor, Pennington, and Frank Albert Wagner, Jr., Hopewell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application Jan. 30, 1968, Ser. No. 701,572, now Patent No. 3,632,621. Divided and this application Mar. 8, 1971, Ser. No. 122,196

Int. Cl. A01n *9/12, 9/20*

U.S. Cl. 424—298 **10 Claims**

New compounds of the formula:



wherein R^1 is either lower-alkylthio, ar(lower-alkyl)thio, arylthio or lower-alkenylthio; R^2 is R^1 or chloro; and R^3 is lower-alkyl. The compounds are useful as nematocides, insecticides and acaricides.

3,767,809

METHOD OF CONTROLLING THE GASTROPOD VECTORS OF PARASITIC FLUKES

Nathan F. Cardarelli, Copley, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,577

Int. Cl. A01n *9/20*

U.S. Cl. 424—304 **12 Claims**

Gastropod vectors of parasitic flukes are controlled by exposing such gastropods or their eggs to an amount of tetrachloroisophthalonitrile sufficient either to kill the gastropods or to prevent the eggs of the gastropods from hatching.

3,767,810

METHOD OF INDUCING ANOREXIA

Abdulmunlem H. Abdallah, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 17, 1972, Ser. No. 254,216

Int. Cl. A61k *27/00*

U.S. Cl. 424—309 **3 Claims**

Method for combatting and curbing the appetite through the use of α-2-(3,4-dichlorophenyl)-3-(dimethylamino)butyl cinnamate and pharmaceutically acceptable salts thereof.

3,767,811

GLYCERYL - N-(SUBSTITUTED PHENYL) ANTHRANILATES IN THE TREATMENT OF INFLAMMATION

Margaret H. Sherlock, Bloomfield, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Continuation of application Ser. No. 4,767, Jan. 21, 1970, now Patent No. 3,681,394, dated Aug. 1, 1972, which is a division of application Ser. No. 629,382, Apr. 10, 1967, now Patent No. 3,511,872, dated May 12, 1970. This application May 18, 1972, Ser. No. 254,361

Int. Cl. A61k *27/00*

U.S. Cl. 424—310 **9 Claims**

The invention relates to glyceryl esters of N-X,Y,Z-phenyl (anthranilic acids), to their use as analgesic anti-inflammatory agents, and to the intermediates useful in the preparation thereof. Illustrative of the preparation of those compounds is the formation of glyceryl-N-(3-trifluoromethylphenyl) anthranilate, as follows: Reflux a mixture containing N-(3-trifluoromethylphenyl) anthranilic acid, chloroacetonitrile in the presence of triethylamine to produce cyanomethyl-N-(3-trifluoromethylphenyl) anthranilate which, by heating with 2,2-dimethyl-1,3-dioxolane-4-methanol in the presence of anhydrous potassium carbonate, produces β-γ-isopropylidenedioxypropyl-N-(3-trifluoromethylphenyl) anthranilate. Hydrolysis of the β-γ-isopropylidenedioxypropyl-N-(3-trifluoromethylphenyl) anthranilate with 75% acetic acid for 35 minutes yields glyceryl N-(3-trifluoromethylphenyl) anthranilate. Alternate methods for the preparation of the glyceryl esters of N-(X,Y,Z-phenyl) anthranilic acids are also described.

3,767,812

NON-SURGICAL REMOVAL OF ABNORMAL BONE PROLIFERATION

Geraldine H. Thiele, Glen-Haven Farm, Rte. 1, Box 12, Windber, Pa. 15963

No Drawing. Continuation-in-part of application Ser. No. 113,362, Feb. 8, 1971. This application Mar. 12, 1971, Ser. No. 123,830

Int. Cl. A61k *27/00*

U.S. Cl. 424—315 **11 Claims**

This invention involves a process of accelerating the death and destruction of bony cells producing unwanted new bone proliferation, say, both without and within joint capsules. This is not a surgical procedure but is accomplished by injecting a dosage of a liquefied composition comprised of a vascular sclerosing *anionic* agent and a liquid carrier into and around abnormal new bone proliferations. Subsequent dosages are preferably administered approximately every five days, but the injection intervals depend on the density and location of the calcium deposits. This injection method is also used to remove unwanted new bone proliferations which occur immediately around the region of or on the perimeter of a broken bone. This invention can be used to treat both man and animal.

After the above treatment is completed, the fractures and nonunions of bones are more readily heated without muscle atrophy, etc., by injecting a liquefied composition containing a non-necrotic vascular sclerosing agent (e.g., sodium morrhuate) into the site of the fracture or nonunion. No cast is used.

3,767,813

USE OF PROSTANOIC ACID DERIVATIVES TO CONTROL PLATELET AGGREGATION

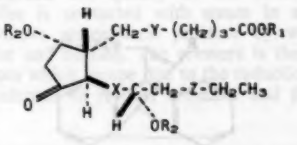
Bengt Samuelsson, Department of Medical Chemistry, Royal Veterinary College, Stockholm 50, Sweden

No Drawing. Original application June 4, 1968, Ser. No. 734,251, now abandoned. Divided and this application May 7, 1971, Ser. No. 141,418

Int. Cl. A61k *27/00*

U.S. Cl. 424—318 **12 Claims**

The invention involves prostanoic acid derivatives of the formula:



wherein X is $-CH_2CH_2-$ or trans-CH=CH—, and both Y and Z are $-CH_2CH_2-$, or wherein X is trans-CH=CH—, Y is cis-CH=CH—, and Z is $-CH_2CH_2-$ or cis-CH=CH—, wherein R_1 is hydrogen, alkyl, or a cation, and wherein R_2 is hydrogen or alkanoyl. These compounds have biological properties which cause them to be useful in the study and treatment of conditions involving blood platelet aggregation and adhesiveness.

3,767,814
METHOD OF TREATING HEMORRHAGIC CONDITIONS

Larry J. Loeffler, North Wales, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application June 17, 1969, Ser. No. 834,138, now Patent No. 3,641,128. Divided and this application June 25, 1971, Ser. No. 157,037

Int. Cl. A61k *27/00*

U.S. Cl. 424—319 **2 Claims**

The compound 4-(α-amino lower alkyl)bicyclo-[2,2,2]-octane-1-carboxylic acid and the pharmaceutically acceptable salts thereof are useful as anti-fibrinolytic compounds.

3,767,815
ANTIHYPERTENSIVE N-(3-CHLOROBENZENE-SULFONYL) ACETAMIDINES

John Christopher Danilewicz, Sandwich, and Michael Szelke, Great Mongeham, near Deal, England, assignors to Pfizer Inc., New York, N.Y.

No Drawing. Original application May 6, 1970, Ser. No. 35,295, now Patent No. 3,694,504. Divided and this application Mar. 20, 1972, Ser. No. 236,525

Claims priority, application Great Britain, May 19, 1969, 25,372/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—321 **2 Claims**

Novel N-(3-chlorobenzenesulfonyl) acetamidines useful in the treatment of hypertension are disclosed.

3,767,816
DIURETIC THIOUREAS

Jack N. Moss and Albert S. Sambuca, Philadelphia, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Aug. 26, 1971, Ser. No. 175,330

Int. Cl. A61k *27/00*

U.S. Cl. 424—322 **6 Claims**

Specific thioureas of the general class 1-aryl-3-(2-hydroxyethyl)-thioureas have been found to possess potent diuretic properties.

3,767,817
TETRACYCLIC AMINES IN AN ANTIDEPRESSANT COMPOSITION

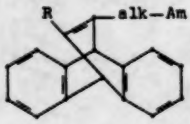
Charles Ferdinand Huebner, Chatham, N.J., assignor to Ciba-Geigy Corporation

No Drawing. Continuation-in-part of application Ser. No. 809,002, Mar. 20, 1969, which is a continuation-in-part of application Ser. No. 793,610, Jan. 23, 1969, which in turn is a continuation-in-part of application Ser. No. 718,363, Apr. 3, 1968, all now abandoned. This application July 25, 1969, Ser. No. 845,083

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 **1 Claim**

11-aminoalkyl-9,10-ethenoanthracenes, e.g. those of the formula



Am=an amino group

alk=alkylene or aralkylene

R=H, etherified or esterified OH, aliphatic, araliphatic, or aromatic radical

acyl derivatives, N-oxides, quaternaries and salts thereof are antidepressants.

3,767,818
PHENYL NITRONE-CONTAINING COMPOSITIONS USEFUL AS ANTI-MICROBIAL AGENTS

Kenneth P. Dorschner and James A. Albright, Jacksonville, Fla., assignors to SCM Corporation, Cleveland, Ohio

No Drawing. Filed May 3, 1971, Ser. No. 139,833

Int. Cl. A01n *9/20*

U.S. Cl. 424—330 **4 Claims**

Novel anti-microbial compositions comprising an inert carrier and a defined class of di-aryl nitrones are described. The compositions are advantageous in that they have high fungicidal activity against a substantially broad spectrum of plant pathogenic fungi, while at the same time the compositions are essentially non-phytotoxic to selected crops and ornamental plants in the fungicidally active amounts employed.

Also described are processes for controlling plant pathogens in soil by soil treatment or by treatment of the crop plant seeds.

3,767,819
ALKYLPHENOXY-ALKYLAMINES AS GASTRIC ANTI-SECRETORY AGENTS

Peter Rodway Leeming, Peter Edward Cross, and David Alexander Cox, Canterbury, and Joachim Augstein, Linford, England, assignors to Pfizer Inc., New York, N.Y.

No Drawing. Original application June 8, 1970, Ser. No. 44,604, now Patent No. 3,709,892. Divided and this application Aug. 24, 1972, Ser. No. 283,396

Claims priority, application Great Britain, June 12, 1969, 29,780/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—330 **2 Claims**

Ortho-substituted phenoxyalkylamines having gastric anti-secretory activity are prepared. A typical embodiment is N,N-diethyl - 2[2-(2-cyclohexylethyl)phenoxy] ethylamine.

3,767,820
ANESTHETIC METHYLFLUOROCYCLOBUTANES

Robert S. Holdsworth and Gerald J. O'Neill, Arlington, and Charles W. Simons, Bedford, Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

No Drawing. Continuation-in-part of abandoned application Ser. No. 141,934, May 10, 1971. This application Aug. 9, 1971, Ser. No. 170,294

Int. Cl. A61k *27/00*

U.S. Cl. 424—352 **5 Claims**

Certain methylfluorocyclobutanes are disclosed which possess utility as inhalation anesthetics. They are: 1-methyl - 2-chloro-3,3-difluorocyclobutane, 1-methyl-1,2,2,3,3-pentafluorocyclobutane, 1-methyl-2-chloro-2,3,3-trifluorocyclobutane and 1-methyl-2,2,3,3-tetrafluorocyclobutane.

ERRATA

For Classes 426—461, 426—147, 426—77, 426—15, 426—252, 426—62, 426—372, 426—65, 426—222, 426—175, 426—65 and 426—38 see:

Patents Nos. 3,767,418 thru 3,767,430

3,767,821
METHOD OF MAKING A COLLAGEN-COATED SAUSAGE

Martin John Deacon, Higham Ferrers, and Leslie Kindleysides, Rushden, England, assignors to Lever Brothers Company, New York, N.Y.

Filed June 10, 1971, Ser. No. 151,668

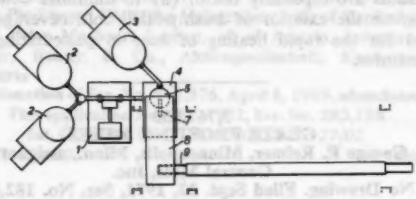
Claims priority, application Great Britain, June 16, 1970, 29,151/70

Int. Cl. A22c *11/00*; **A23b** *1/00*

U.S. Cl. 426—276 **5 Claims**

The collagen coating of a collagen-coated foodstuff, such as collagen-cased sausage, tends to disintegrate when

the foodstuff is cooked in a humid environment. The stability of such coatings is improved by incorporating in



them a thermally gelling non-ionic cellulose ether, such as methyl cellulose.

3,767,822

BAKERY PRODUCTS CONTAINING POLYOXYALKYLENE DERIVATIVES OF PROPYLENE GLYCOL HIGHER FATTY ACID ESTERS

Antal G. Oszlanyi, Brook Park, Richard J. Zielinski, Middleburg Heights, and Thomas J. Kozak, Parma Heights, Ohio, assignors to SCM Corporation, Cleveland, Ohio

No Drawing. Filed Oct. 22, 1970, Ser. No. 83,195
Int. Cl. A21d *2/16*
U.S. Cl. 426—24 **6 Claims**

Yeast-raised bakery products having improved properties are produced by excluding as a portion of the dough conditioner therefor a polyoxyalkylene derivative of a higher fatty acid ester of propylene glycol.

3,767,823

PREPARATION OF TOASTER SANDWICH

Fred G. Wheeler, Park Forest, and Frank J. Pratl, Lisle, Ill., assignors to Armour and Company, Chicago, Ill.

No Drawing. Filed June 24, 1971, Ser. No. 156,564
Int. Cl. A21d *13/00*
U.S. Cl. 426—241 **9 Claims**

A sandwich suitable for heating in toasters and for other uses is prepared by encasing a food filling in raw dough, wetting or blanching the product to render it receptive to a dry cereal and adhering a coating of cereal to the dough by a second blanching or aqueous dip, and cooking the product.

3,767,824

METHOD OF VITAMIN COATING CEREAL PRODUCTS

William L. Keyser, East Dundee, and Walter J. Zielinski, Ingleside, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

No Drawing. Filed May 17, 1971, Ser. No. 144,348
Int. Cl. A23l *1/30*
U.S. Cl. 426—290 **4 Claims**

This invention relates to a process of vitamin coating cereal products and particularly to a new vitamin coating procedure for ready-to-eat breakfast cereals.

3,767,825

METHOD OF COATING FOOD PARTICLES WITH A BLEND OF VITAMINS A AND C

Paul A. Hammes, Westfield, and Melvin J. Boroshok, Yonkers, N.Y., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed June 18, 1971, Ser. No. 154,595
Int. Cl. A23l *1/30*
U.S. Cl. 426—290 **2 Claims**

A vitamin containing coating is made up of vitamin A beadlets and vitamin C having a wax-like coating thereon that becomes tacky at 40°–60° C. It is dusted on hot food particles and it adheres thereto as a coating.

3,767,826

BATTER STARCH

James C. Fruin, Webster Groves, Mo., assignor to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Oct. 7, 1970, Ser. No. 78,697
Int. Cl. A23b *3/14;* **A23l** *1/00*
U.S. Cl. 426—293 **5 Claims**

A batter starch and process of making same in which starch is mixed dry with an oxidizing agent, preferably calcium hypochlorite and preferably aged before being mixed with water to form a batter for coating frozen food products, particularly fish, to cause bread crumbs to adhere to the frozen food product. The crumb coated fish are fried and re-frozen to form a consumer product, or may be frozen raw for final preparation immediately prior to use.

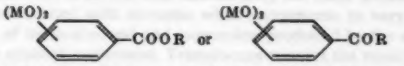
3,767,827

PRESERVATION OF ALCOHOLIC BEVERAGES WITH DI-SUBSTITUTED BENZOIC ESTERS AND KETONES

Ryuzo Ueno and Motomu Kashihara, Nishinomiya, and Toshio Matsuda, Itami, Japan, assignors to Ueno Fine Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed Aug. 17, 1970, Ser. No. 64,589
Claims priority, application Japan, Dec. 6, 1969, 44/97,538, 44/97,539, 44/97,540; Dec. 19, 1969, 44/101,672; Dec. 22, 1969, 44/102,677
Int. Cl. C12b *1/00*
U.S. Cl. 426—330 **5 Claims**

A process for the preservation of liquid foodstuffs which comprises adding to a liquid foodstuff a compound expressed by the formula



wherein R is an alkyl group of 3–8 carbon atoms and M stands for hydrogen, and alkali metal or ½ mole of an alkaline earth metal,
in an amount of 5–300 p.p.m.

3,767,828

CONFINED VOLUME COFFEE AROMA

William V. White, deceased, late of Spring Valley, N.Y., by Grace H. White, Spring Valley, N.Y., Claudia L. White, Toledo, Ohio, and Robert E. White, Spring Valley, N.Y., heirs, assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 849,531, Aug. 12, 1969, now Patent No. 3,615,665, which is a continuation-in-part of application Ser. No. 571,382, Aug. 10, 1966, now Patent No. 3,476,566. This application July 9, 1971, Ser. No. 161,327
The portion of the term of the patent subsequent to Oct. 26, 1988, has been disclaimed
Int. Cl. A23f *1/04*
U.S. Cl. 426—387 **10 Claims**

A new method of stripping desirable volatiles from roasted coffee has been discovered which does not significantly degrade the quality of the roasted coffee. Roasted coffee is contacted with steam in a confined volume at above atmospheric pressure by wetting the roasted coffee and heating. The pressure is then relieved and the vapors which escape due to the reduction of pressure are condensed to recover aromatic and flavor constituents.

3,767,829

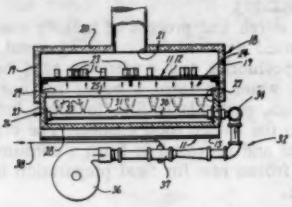
METHOD FOR WARMING CARBONATED BEVERAGES IN SEALED CONTAINERS

Fred A. Karr, Redwood City, Calif., assignor to Shasta Beverages, Hayward, Calif.

Filed May 4, 1971, Ser. No. 140,140
Int. Cl. A23l *3/02;* **C12h** *1/20*
U.S. Cl. 426—405 **12 Claims**

A method for the continuous heating of the contents of sealed containers (e.g. metal cans or glass bottles) of

carbonated beverages (e.g. beer and soft drinks) comprising conveying the sealed containers on (a) an endless



perforate belt or (b) a vibratory conveyor deck over an elongated dry heat source so that the temperature of the beverage is increased while permitting the head space to remain relatively cool. An apparatus for performing that method including heat sources of the infrared heat-radiating type or of the open flame type. The method and apparatus are especially useful (a) to minimize condensation on the exterior of freshly-filled cold beverages and (b) for the rapid heating of beer to pasteurizing temperatures.

3,767,830
GLAZE FROSTING MIXES
George R. Reimer, Minneapolis, Minn., assignor to General Mills, Inc.
No Drawing. Filed Sept. 22, 1971, Ser. No. 182,824
Int. Cl. A23g 3/00
U.S. Cl. 426—162 **10 Claims**

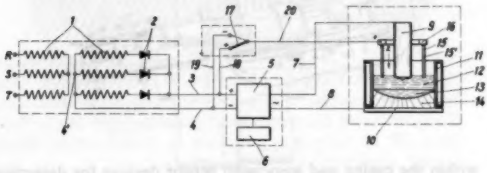
A glossy glaze topping dry mix including sugar, shortening and pregelatinized starch. When rehydrated, the glaze rapidly dries to texture of a dry touch surface and a moist substratum.

ELECTRICAL

3,767,831
PROCESS AND APPARATUS FOR ELECTRO-SLAG REMELTING METALS AND IN PARTICULAR STEEL

Erwin Plockinger, Wolfgang Holzgruber, both of Kapfenberg, and Peter Machner, Leoben, all of Austria, assignors to Gebr. Bohler & Co., Aktiengesellschaft, Kapfenberg, Austria

Continuation of Ser. No. 814,376, April 8, 1969, abandoned.
This application Aug. 23, 1972, Ser. No. 283,158
Int. Cl. H05b 7/18; C22d 7/00; B22d 27/02
U.S. Cl. 13—12 12 Claims

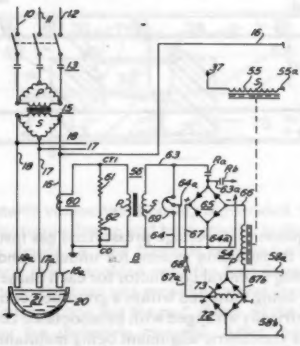


An apparatus and method for electro-slag-remelting of metals and in particular steel. The electric current flowing through the to be molten electrode changes periodically. The current which is being fed to the apparatus may be either an ordinary alternating current or a three-phase alternating current and is converted into a substantially different current having a base frequency (f) which periodically changes its direction. It is the latter current which supplies the power for remelting the electrode.

3,767,832
AUTOMATIC ELECTRODE CONTROL

George A. Bennett, 620 18th St., Beaver Falls, Pa.

Filed Aug. 17, 1972, Ser. No. 281,316
Int. Cl. H05b 7/00
U.S. Cl. 13—13 3 Claims

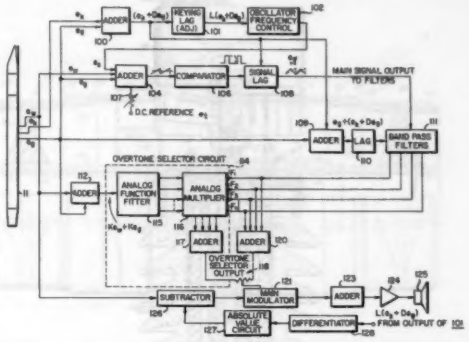


An electrode-positioning system for electric furnaces including a first circuit which develops a signal proportional to the magnitude of voltage at the electrode, and a second circuit which develops a signal proportional to the magnitude of current flow through the electrode. Outputs of each of the two circuits are impressed upon the power supply circuit of a reversible winch motor through saturable core reactors. The relative magnitudes of the control signals govern the direction of current flow through the motor supply circuit, and the winch motor, in turn, raises or lowers the electrode through a direct mechanical coupling.

3,767,833
ELECTRONIC MUSICAL INSTRUMENT

Roger R. Noble, and William A. Bernardi, both of Norwell, Mass., assignors to Computone, Inc., Hanover, Mass.

Filed Oct. 5, 1971, Ser. No. 186,645
Int. Cl. G10h 1/04, 3/00
U.S. Cl. 84—1.01 24 Claims

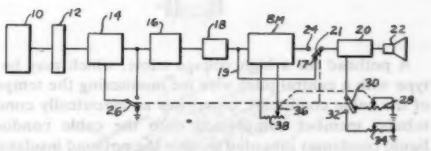


A wind-actuated electronic musical instrument for play by a musican. The musician uses substantially the same technique as is associated with acoustic wind instruments to vary the range of musical sound and expression produced by the electronic musical instrument. Transducers convert the musician-produced air flow, lip pressure and fingering of the instrument to appropriate electrical signals, which signals control the frequency, harmonic content and harmonic phase of the sound produced by a tone generator.

3,767,834
ELECTRONIC ORGAN WITH PLAYER CONTROLLED MUTED BRASS EFFECTS

Richard Hebeisen, and Russel J. Starkey, both of Jasper, Ind., assignors to Jasper Electronics Manufacturing Company, Jasper, Ind.

Filed Aug. 6, 1971, Ser. No. 169,635
Int. Cl. G10h 1/02
U.S. Cl. 84—1.19 11 Claims

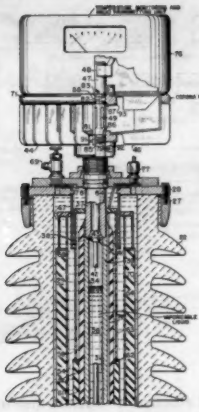


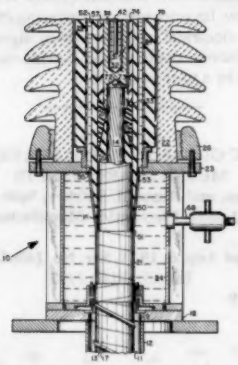
An electronic organ circuit in which an effect similar to muted brass is created by passing the organ signal through a circuit, the frequency response of which can be varied by a potentiometer connected with the swell pedal of the organ. More specifically, the circuit, when effective, provides somewhat of a muted brass sound and which varies with adjustment of aforementioned potentiometer or the swell pedal of the organ is adjusted. When the circuit is made effective, the main organ volume control is switched from a potentiometer under the control of the swell pedal to another potentiometer which can be adjusted manually. Further, a novel switching arrangement is disclosed utilizing transistors for routing signals.

3,767,835
POTHEAD TERMINATION COMPRISING A VAPOR CONDENSER AND A TUBULAR CONDUCTOR EXTENSION CONTAINING A VAPORIZABLE LIQUID, AND METHOD

John S. Engelhardt, Hartsdale, N.Y., assignor to Anaconda Company, New York, N.Y.

Filed June 7, 1972, Ser. No. 260,626
Int. Cl. H02g *15/22, 15/28, 1/14*
U.S. Cl. 174—11 BH 14 Claims





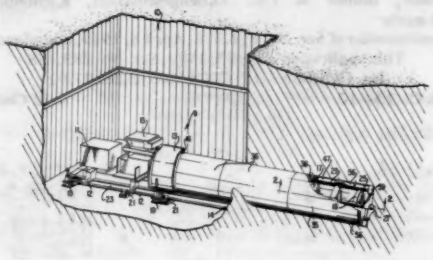
A pothead for a high voltage cable, which may be of the type with a central pilot wire for monitoring the temperature of the cable conductor, comprises an electrically conducting tubular member compressed onto the cable conductor, a liquid condenser mounted outside the pothead insulator and a volatile liquid within the tubular member. The condenser may have radial fins in proximity to a corona ring and be surmounted by a temperature monitor and radio transmitter.

3,767,836
EARTH BORING METHOD AND APPARATUS

Warren P. Geis, Port Washington; Michael F. Hopkins, Milwaukee, and Charles E. Jordan, Whitefish Bay, all of Wis., assignors to Koehring Company, Milwaukee, Wis.

Filed Oct. 19, 1971, Ser. No. 190,487
Int. Cl. E21b *7/08;* E21c *9/00, 19/00*
U.S. Cl. 175—24 20 Claims

A method and apparatus for boring a hole in the earth utilizing a rotary auger extending through a casing member which guides the lateral cutting direction of the auger as it rotates. During auger advancement through the earth, the boring machine applies axial thrust to the casing member for advancing it through the bored hole directly behind the auger. The casing member is adapted to bend longitudinally whenever the hole deviates from a straight path. The casing member includes circumferentially spaced rods mounted longitudinally

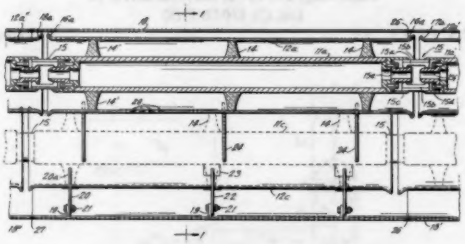


within the casing and associated sensor devices for detecting the degree and direction of casing member bending. Movable shoes are mounted adjacent to the exterior of the casing member and are actuated by a control device responsive to signals received from the sensor devices to guide the casing member and auger back toward the desired path.

3,767,837
HIGH-VOLTAGE PRESSURIZED GAS-INSULATED POWER TRANSMISSION SYSTEMS

Howard W. Graybill, Greensburg, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Aug. 24, 1972, Ser. No. 283,529
Int. Cl. H01b *9/06*
U.S. Cl. 174—27 8 Claims



A multiphase high-voltage pressurized gas insulated electrical power transmission system for underground applications incorporating a central conductor for each phase, each central conductor being mounted within a grounded conductive housing concentrically arranged with its associated central conductor with the concentric alignment being maintained by insulating spacers. Each of the central conductors and associated housings for the multiphase system are mounted within a steel housing and arranged in a triangular or delta configuration. Conductors of adjacent sections are joined by suitable dielectrically shielded plug-in contact assemblies which provide for electrical continuity between adjacent central conductors of the multiphase bus assembly sections. The concentric grounded housings are preferably perforated to facilitate egress of contaminating particles which may be present within the interior of each grounded housing. The outer steel housing sections are joined, end to end by butt joint welding techniques.

In another preferred embodiment, the grounded aluminum housings surround only selected portions of their associated

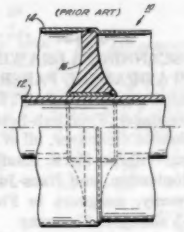
inner conductors and single ground screen means are employed in each housing section for collection of contaminating particles which may be present within the assembly.

3,767,838

GAS INSULATED FLEXIBLE HIGH VOLTAGE CABLE

Lorne D. McConnell, Radnor, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Jan. 17, 1972, Ser. No. 218,277
Int. Cl. H01b 9/06, 3/48
U.S. Cl. 174—25 G 8 Claims



A gas insulated flexible high voltage cable in which an annular conductor is positioned within an annular conductive enclosure. Spacer means position and maintain the conductor within the annular conductive enclosure.

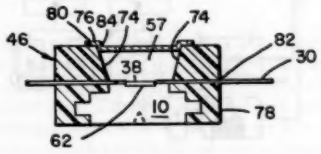
The spacer means comprises a plurality of gas permeable support layers of porous material, spaced one from another, and a plurality of perforated conductive layers alternately positioned between each pair of support layers. The spacer means is saturated by a volume of compressed insulating gas, such as sulfur hexafluoride.

3,767,839

PLASTIC MICRO-ELECTRONIC PACKAGES

Jack L. Beal, Saratoga, Calif., assignor to Wells Plastics of California, Inc., Sunnyvale, Calif.

Filed June 4, 1971, Ser. No. 150,129
Int. Cl. H05h 9/02
U.S. Cl. 174—52 S 10 Claims



A rugged stable component housing is provided, for mounting a microelectronic device and hermetically sealing the area enclosing the device. A lead frame is mounted onto a base, and a dielectric body moulded onto the lead frame, bonding the lead frame to the base and providing a nest area. The nest area has the internal tips and the pad, if any, of the lead frame uncovered by the dielectric material. After mounting the microelectronic device, the nest area is hermetically sealed with a lid bonded to the dielectric body.

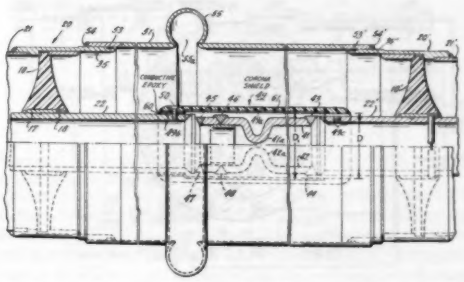
3,767,840

NON-METALLIC CORONA SHIELD FOR GAS-INSULATED ELECTRICAL EQUIPMENT AND THE LIKE

John C. Cronin, and John J. Depcrymski, both of Greensburg, Pa., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Sept. 8, 1972, Ser. No. 278,793
Int. Cl. H02g 15/24
U.S. Cl. 174—73 R 3 Claims

A corona shield for use in isolated phase bus structure comprised of a central conductor and a concentrically arranged surrounded grounded housing. To electrically join adjacent sections of such isolated phase bus, the inner conductors are arranged in end-to-end fashion with suitable expansion joint structures between adjacent sections. A corona shield is provided in the region surrounding the expansion joint to reduce local stress concentration and thereby provide enhanced dielectric shielding. The corona shield is formed of a suitable dielectric (i.e., insulating) material coated with a suitable conductive material along its interior surface so as to electrically engage the end portion of one of the two conductor sections arranged end-to-end while being electrically insulated from



the end of the remaining adjacent conductive portion. This arrangement provides for relative linear movement of the adjacent inner conductors due to thermal expansion and contraction while preventing the generation of particles due to metal-to-metal contact and consequent abrasion therebetween so as to greatly reduce the probability of flashover.

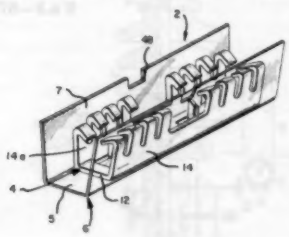
By increasing the conductivity of the conductive coating in the immediate region of the corona shield and the relatively movable inner conductor, current flow therebetween is eliminated.

3,767,841

CONDUCTOR IN-SLOT ELECTRICAL CONNECTORS

Leslie Alan Anderson; Frederick Robert Deak; George Halls Foster, Jr., and John Maury Gentry, all of Winston-Salem, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed July 25, 1972, Ser. No. 274,931
Int. Cl. H02g 15/08
U.S. Cl. 174—84 C 12 Claims



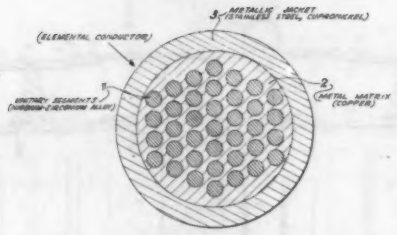
Electrical connecting device has a channel-shaped cross-section and tongues struck up from the web of the channel. Wire receiving slots extend downwardly from the free ends of the tongues. A plurality of fingers extend from the sidewalls and are adapted to be curled inwardly and downwardly to stuff a wire positioned between the sidewalls into the slots in the tongues.

3,767,842

SUPER CONDUCTING CABLE OF ELEMENTAL CONDUCTORS IN A METAL MATRIX WITHIN A METALLIC JACKET

Gaston Bronca, Fontenay-aux-Roses; Jean-Paul Pouillange, Bagneux, both of France, and Ivan Hlasnik, Bratislava, Czechoslovakia, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Feb. 25, 1972, Ser. No. 229,439
Int. Cl. H01v 11/00
U.S. Cl. 174—128 4 Claims


3 METALLIC JACKET (STAINLESS STEEL, CUPRONICKEL)
(ELEMENTAL CONDUCTOR)
1 UNITARY SEGMENTS (NIOBIUM-ZIRCONIUM ALLOY)
2 (METAL MATRIX (COPPER))

A superconducting cable fabricated in accordance with the method claimed comprises an assembly of elemental conductors formed of unitary segments embedded in a conductive metallic matrix. The assembly is encased in a jacket of metal or metal alloy having high electrical resistivity, then impregnated with a metal alloy having a low melting point which adheres to the jacket.

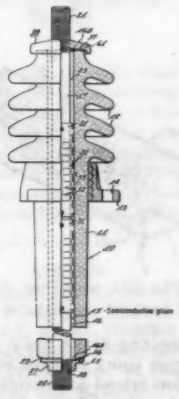
By means of the method, losses of electric energy are considerably reduced and the cable is provided with higher tensile strength and improved mechanical characteristics.

3,767,843

ELECTRICAL BUSHING HAVING MEANS FOR LOWERING THE POWER FACTOR

David T. Stone, Foxboro, Mass., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 17, 1972, Ser. No. 298,410
Int. Cl. H01b 17/26, 17/42
U.S. Cl. 174—142 8 Claims



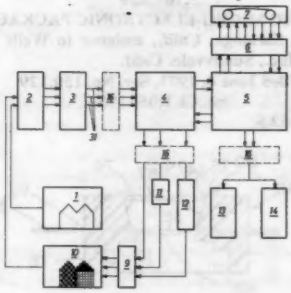
A dry type bushing having an insulator provided with an axially extending bore, the wall of which is coated with a semiconductive glaze, is provided with means for shunting the air gap therein. A multitude of connections between the axially extending conductor and the semiconductor glaze are distributed both axially along the length of the bushing and angularly about the circumference of the wall of the bore. This distribution of a multitude of connections minimizes watt loss by placing the charging current directly in the region of highest electrical stress; and also, it distributes the current over a wide surface of the semiconductive glaze.

3,767,844

DEVICE FOR SCANNING A DRAWING AND FOR PRINTING A DRAWING PAPER WITH A CORRESPONDING PATTERN

Walter Ludvig Schnattinger, Eriskirch-Schlatt; Albert Seelos, Heinz Mayer, Reinhold Oelmayer, all of Kaufbeuren; Josef Duell, Oberbeuren; Wilhelm Hertl, Kaufbeuren; Hans-Jorg Koch, Stuttgart-Bonlanden, and Hans-Joachim Stock, Freiberg, all of Germany, assignors to Firma Franz Morat GmbH, Stuttgart-Vaihingen, Germany

Filed Dec. 29, 1971, Ser. No. 213,590
Claims priority, application Germany, Dec. 30, 1970, P 20 64 438.6; Dec. 30, 1970, G 70 48 125.3
Int. Cl. H04n 9/02
U.S. Cl. 178—5.2 R 30 Claims



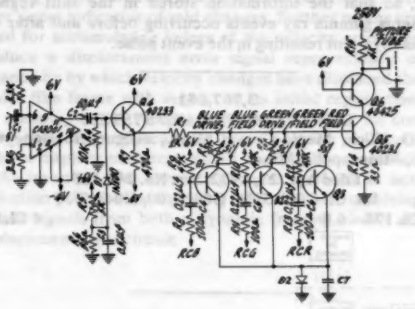
A device for scanning a drawing and/or for printing a drawing paper with a pattern corresponding to said drawing, which comprises a support for holding the drawing and/or the drawing paper; a scanning head for generating electrical signals corresponding to said drawing, and/or a printing head which is fed the corresponding electrical signals for printing the pattern; means for generating relative motion between said support and the scanning head and/or the printer head in one direction; means for generating relative motion between support and scanning head and/or printer head in another direction, normal to the first; one electronic trigger generator for the generation of scanning and/or printer trigger signals when a point of the drawing should be scanned or when a point of the pattern should be printed; one release circuit for the successive release of a given number of scanning and/or printer trigger signals; and another release circuit for connecting the means for the relative motion in the second direction during such time intervals in which the scanning and/or printer trigger signals are not released.

3,767,845

COLOR IMAGE REPRODUCING APPARATUS

Theodore Frederick Simpson, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 17, 1970, Ser. No. 90,346
Int. Cl. H04n 9/22
U.S. Cl. 178—5.4 R 3 Claims



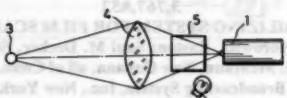
Different values of resistance are sequenced into an attenuator network to vary the amplitude of a video signal applied to a single-gun cathode-ray tube color television receiver to offset differences in phosphor efficiency and control the proportionality of reproduced white obtained.

3,767,846

AUXILIARY ILLUMINATION DEVICE FOR UNIFORM ILLUMINATION OF A LIGHT RECEIVING SURFACE OF THE PICK-UP TUBE FOR COLOR TELEVISION

Masami Okubo, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1970, Ser. No. 98,489
Claims priority, application Japan, Dec. 25, 1969, 44/104512
Int. Cl. H04n 9/06
U.S. Cl. 178—5.4 ST 11 Claims



In the apparatus disclosed, a clad rod is positioned in front of the light receiving surface of a dichroic mirror system, which is in turn placed in front of the pick-up tube. The clad rod is composed of transparent material having a relatively high refractive index. It is clad with a thin transparent material having a relatively low refractive index. Part of the clad rod is provided with a light diffusing roughened surface. Light is directed toward one end of the clad rod by a light source.

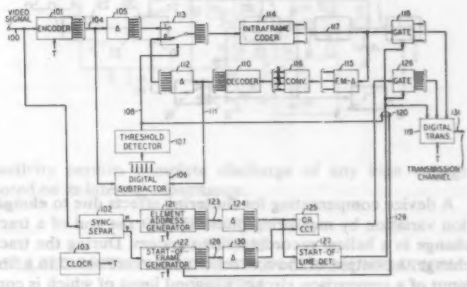
3,767,847

FRAME-TO-FRAME REDUNDANCY REDUCTION SYSTEM WHICH TRANSMITS AN INTRAFRAME CODED SIGNAL

Barin Geoffry Haskell; John Ormond Limb, both of New Shrewsbury, and Roger Fabian Wedgwood Pease, Holmdel, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 1, 1971, Ser. No. 158,812
Int. Cl. H04n 7/12
U.S. Cl. 178—6 12 Claims

The element-to-element differences for an entire video frame of picture elements are stored in a frame memory. These stored differences are converted to picture element amplitudes by a decoder. Normally, the amplitude value from the decoder is reconverted into an element-to-element difference by an intraframe coder and coupled back into the frame memory. However, each amplitude value developed by the decoder is also compared with the new amplitude of its corresponding picture element. When a significant difference exists between the amplitude value at the output of the decoder and the new amplitude value, the latter value is coupled to the input of the coder in place of the amplitude value from the decoder. The resulting element-to-element difference is transmitted to a receiving location. In the receiver, element-to-element differences are stored in a frame memory and circulated in a loop including a decoder and intraframe coder similar to that found in the transmitter. In addition, the element-to-element differences out of the receiver's coder are coupled into a second decoder. When an element-to-element difference for a picture element is received, it is coupled to the input of the second decoder in place of the element-to-element difference from the intraframe coder, and the output of the second decoder is coupled to the input of the intraframe coder in place of the output from the first-mentioned decoder.

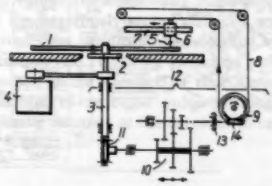


3,767,848

POSITIVELY GUIDED DISC RECORD PICKUP

Eduard Schuller, Wedel; Gerhard Dickopp, Wolfgang Rainer, Horst Redlich, and Hans-Joachim Klemp, all of Berlin, Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt, and Teldec-Telefunken-Decca Schallplatten GmbH, Hamburg, both of Germany

Filed June 18, 1971, Ser. No. 154,545
Claims priority, application Germany, June 18, 1970, P 20 29 909.6
Int. Cl. G11b 3/22, 3/38; H04n 5/76
U.S. Cl. 178—6.6 R 23 Claims



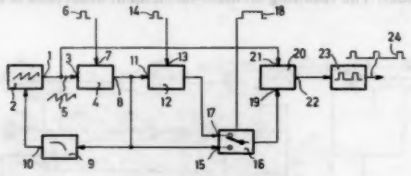
A mechanism for playing back television pictures recorded on picture record discs including, a pickup for the video signals which are moved radially across the disc by means of a positively guided mount in which the pickup is elastically mounted. The guide means for the mount are rigidly coupled with the turntable drive.

3,767,849

ARRANGEMENT FOR PLAYING-BACK VIDEO SIGNALS

Johannes Hendrik Wessels, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 847,137, Aug. 4, 1969, abandoned.
This application Nov. 22, 1971, Ser. No. 201,220
Claims priority, application Netherlands, Aug. 9, 1968, 6811420
Int. Cl. H02n 5/21; H04n 5/78
U.S. Cl. 178—6.6 DC 4 Claims



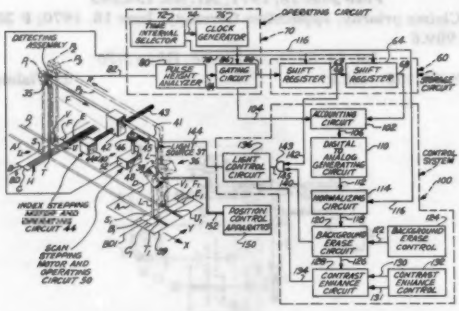
A device compensating for fluttering effects due to elongation variation by measuring phase shift at the end of a track change in a helical recording video system. During the track change the output of the control circuit is connected to a first input of a comparison circuit, a second input of which is connected to an output of the auxiliary generator which is designed as a sawtooth generator, the output of the comparison circuit being connected to a pulse generator which produces the missing line-synchronizing pulses in a manner such that these pulses are at least substantially in phase with the line synchronizing pulses of the next track. In the comparison circuit the direct voltage of the control circuit is compared with the amplitude of the sawtooth voltage, and when the two voltages are equal the pulse source produces a line synchronizing pulse which is at least substantially in phase with the line synchronizing pulses of the next track.

3,767,850

GRAPHIC RECORDING APPARATUS AND METHOD

Lonnie S. McMillian; Arthur H. Hutchison, and Leslie H. Gard, all of Huntsville, Ala., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 22, 1972, Ser. No. 228,173
Int. Cl. G01t 1/20; H04n 5/84
U.S. Cl. 178—6.7 R 21 Claims



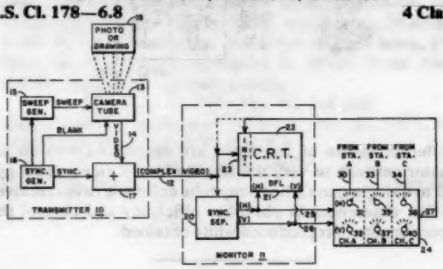
The disclosure describes apparatus for preventing scalloping the photographic film image produced by a scintillation scanner. The described scanner comprises a detector which can be scanned along parallel paths over an area of interest in a patient. The detector is directly coupled to a light-emitting tube that simultaneously is scanned in a similar manner over a photographic film. Gamma rays emitted by the patient are received by the detector and are converted into corresponding electrical event pulses and bits of event information which are sequentially shifted through shift registers in response to periodic clock pulses. A stepping motor moves the detector and light-producing tube a predetermined distance in response to the receipt of each clock pulse so that the concentration of gamma ray events occuring along any particular segment of the detector scan path can be precisely determined. An individual event pulse is transmitted to the light-producing tube after is has been shifted halfway through the shift register, so that the information stored in the shift register represents gamma ray events occurring before and after the gamma ray event resulting in the event pulse.

3,767,851

DISPLAY DRIVER AND SYSTEM

Dale O. Wick, Maple Grove, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 27, 1972, Ser. No. 248,165
Int. Cl. G08b 5/36; G09f 9/00; H04n 7/18
U.S. Cl. 178—6.8 4 Claims



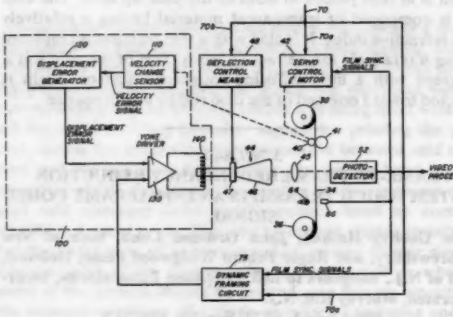
Improved apparatus for use in plant security and related applications to give a visible signal, at a central location, which is spatially associated with the location of the signal source. The improvement consists in using a closed circuit television monitor to observe a representation of premises to be secured, and electronically inserting indicia into the reproduction at the monitor, at the locations of any security signal sources which are responding to violations.

3,767,852

STABILIZING SYSTEM FOR FILM SCANNER

Harvey M. Horowitz, Easton; Saul M. Decker, Stamford, and Renville H. McMann, New Canaan, all of Conn., assignors to Columbia Broadcasting System, Inc., New York, N.Y.

Filed June 26, 1972, Ser. No. 266,453
Int. Cl. H04n 5/36
U.S. Cl. 178—7.2 12 Claims



This disclosure applies to an apparatus for scanning a film having a succession of frames along its length, the apparatus

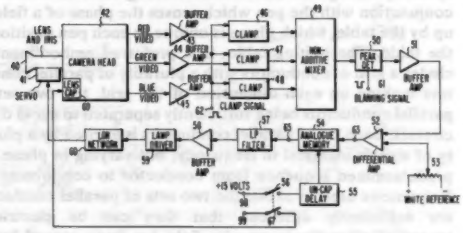
including a film transport for moving the film at a substantially uniform rate past a scanning position, means for electronically scanning the frames at the scanning position, and means for initially registering each frame to be scanned with the scanning beam. There is disclosed an improved system for continuously retaining registration between a particular frame being scanned and the scanning beam. Means are provided for continuously sensing changes in the velocity of the film during scanning of the particular frame and for generating a velocity error signal indicative of said changes. Further means are provided for accumulating values of the velocity error signal to produce a displacement error signal representative of the distance by by which velocity changes have displaced the particular film frame with respect to its initial registration with the scanning beam. Finally, means are provided for continuously correcting the scanning beam position in accordance with the displacement error signal. In a preferred embodiment of the invention, the correcting means includes an auxiliary deflection yoke for the scanning tube, the yoke receiving correction signals from both a dynamic framing circuit and the displacement error circuit.

3,767,853

AUTOMATIC IRIS CONTROL

Sidney Leo Bendell, Riverton, and Cydney Ashley Johnson, Marlton, both of N.J.

Filed Sept. 21, 1972, Ser. No. 290,802
Int. Cl. H04n *5/34*
U.S. Cl. 178—7.2 **8 Claims**



An automatic iris control for use in a television camera. The apparatus is responsive to changes in scene illumination and prevents iris change in response to capping the lens. A memory system is employed to retain the iris control voltage prior to lens cap operation and maintain that voltage until the lens cap is removed. Delay circuitry insures inactivation of automatic iris control until the lens cap is completely withdrawn.

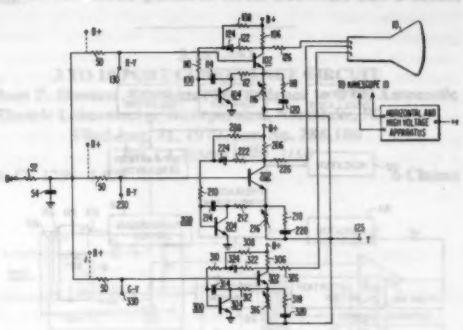
3,767,854

DELAY OF VIDEO AMPLIFIER D.C. BIAS CHANGE TO ACCOMODATE RISE/FALL OF KINESCOPE HIGH VOLTAGE AFTER TURN ON/OFF OF RECEIVER

John Stark, Jr., and Robert Joseph Gries, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 2, 1972, Ser. No. 293,759
Int. Cl. H04n *5/44*
U.S. Cl. 178—5.4 R **5 Claims**

A resistance-capacitance time constant network automatically delays the conductivity of a television kinescope when the receiver is turned-on and maintains its conductivity after the receiver is turned-off. The delay in conductivity exists to permit its applied high voltage to first rise to a value to attract electrons towards the faceplate, while maintaining the conductivity permits complete discharge of any high voltage stored on its internal capacitance.

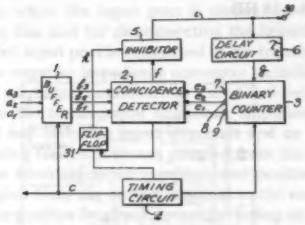


3,767,855

PULSE POSITION MODULATION COMMUNICATION SYSTEM

Yoshito Ueno; Mitsuo Kajitani; Yukio Takimoto, and Takashi Shinoda, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo-to, Japan

Filed Feb. 22, 1972, Ser. No. 227,743
Claims priority, application Japan, Feb. 25, 1971, 46/9828
Int. Cl. H04b *1/04*
U.S. Cl. 178—68 **5 Claims**



A pulse position modulation communication system which elminates the need for generating independent synchronizing pulses at transmitter facility. Numerical data is generated sequentially and is temporarily stored. The next occurring data is summed with the previously stored data, and the sum is transmitted in a position within a time frame representative of the numerical value. Simultaneously therewith this resultant sum replaces the previously stored data for summation with the next received data. Addition is performed by a modulo-M summing operation (i.e., ignoring any carry) where the value of M is the same as the number of time slots in each time frame. Subtraction of received pulse position data is performed in a similar manner at the receiver to restore the data to its original form.

3,767,856

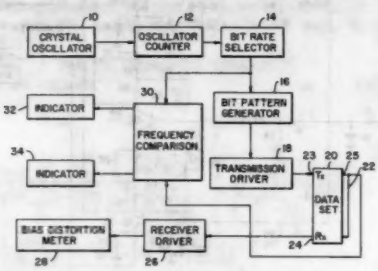
DATA SET TESTER

Ramesh Sawhney, Ann Arbor, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed July 20, 1971, Ser. No. 164,275
Int. Cl. H04m *3/08*; **H04l** *25/00*
U.S. Cl. 178—69 A **3 Claims**

A portable data set tester having means for generating a predetermined cyclic pattern of mark and space signals is

adaptable to system check either a single data set or a data communication system. Additionally the data set tester includes a bias distortion meter checking circuit for checking



the quality of the data set receiver and means for a frequency comparison of the transmitter oscillator of the data set with a standard crystal controlled frequency generator in the tester.

3,767,857

DISTRIBUTIVE IMMEDIATE RINGING CIRCUITS FOR A TELEPHONE SYSTEM

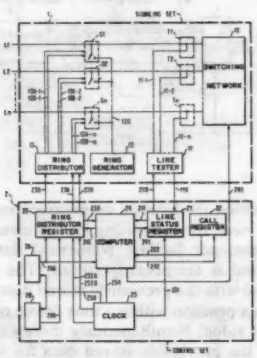
Jean D. Colas; Robert Leblan, and Henry Schiesser, all of Vence, France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 24, 1972, Ser. No. 228,973

Claims priority, application France, Mar. 11, 1971, 7110278

Int. Cl. H04m *3/04*

U.S. Cl. 179—18 HB **4 Claims**



In a data processor controlled telephone system, the generator which supplies the ringing current is saved from overload conditions during any part of a ringing period by distributing the times of connection of the phones being powered for ringing across the entire ring period. A table is provided with an entry location for each of a number of time slots into which a ringing period is divided. Only a limited number of called line addresses can be stored within each entry location. The locations are continuously scanned and entry of a called line address is controlled, so that the address will be stored in the first entry location scanned and found to have available storage space. This algorithm will start ringing signals to a called line as soon as it can be arranged without momentary overloading of the generator.

3,767,858

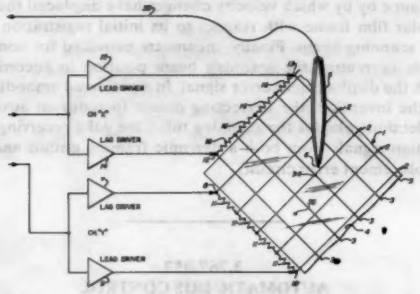
APPARATUS FOR CONVERTING THE POSITION OF A MANUALLY OPERATED INSTRUMENT INTO AN ELECTRICAL SIGNAL

James L. Rodgers, Tempe, Ariz., assignor to Talos Systems Inc., Scottsdale, Ariz.

Filed Nov. 18, 1971, Ser. No. 199,887

Int. Cl. G08c *21/00*

U.S. Cl. 178—18 **7 Claims**



In order to convert the mechanical position of a writing pen, or the like, into electrical signals which can be utilized for various control, data input, and data transmission purposes, a specially configured and excited writing table is utilized, in conjunction with the pen which senses the phase of a field set up by the table, which phase is unique to each pen position on the table. The writing table, in a preferred embodiment includes a grid of conductors with a plurality of parallel conductors making up each dimension of the grid, the two sets of parallel conductors being sufficiently separated to avoid direct contact. Each set of parallel conductors is excited by a plurality of signals identical in frequency, but varying in phase in a predetermined sequence from conductor to conductor. The frequencies used to excite the two sets of parallel conductors are sufficiently different, that they can be electrically separated after the composite field has been sensed by the pen, and passed into individual phase locked loops which serve to both develop the drive to the sets of parallel conductors and provide output signals representative of the pen position in each coordinate. Means are also provided for combining the information in the two coordinates into a single frequency-modulated signal for utilization, by way of example, in telemetering the pen position by wire or wirelessly.

3,767,859

HOSPITAL COMMUNICATION SYSTEM

William E. Doering, Manchester, Mo., and Willis J. Jensen, Palatine, Ill., assignors to Clemetron Corporation, Chicago, Ill.

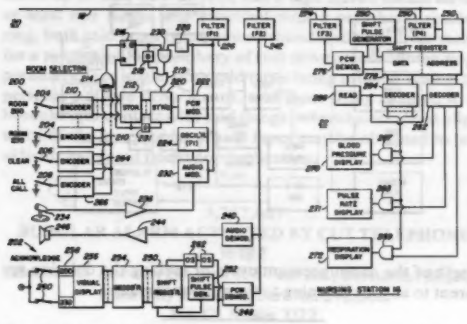
Filed Dec. 30, 1971, Ser. No. 214,052

Int. Cl. H04m *3/22*

U.S. Cl. 179—1 H **4 Claims**

A hospital communication system uses a single coaxial cable to transmit audio and physiological data between patient rooms and a control area, such as a nursing station. The nurse-call facilities use a dual frequency channel over the cable to transmit room selection addresses between the rooms and the station to control audio transmission and enabling room call displays. Data monitored in the rooms is transmitted in digital

form to displays at the station using the common cable and a distinct frequency for each room. Each monitored item in a



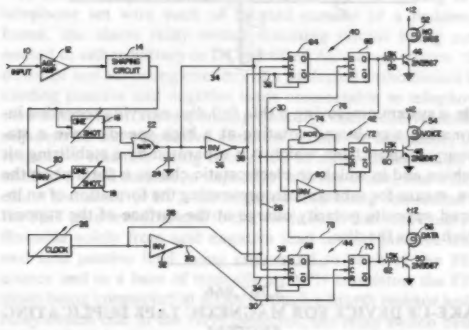
room is individually addressed to control display selection. Selection, address, and physiological data is transmitted using pulse code modulation techniques.

3,767,860

MODULATION IDENTIFICATION SYSTEM

Robert M. Brown, Woodbridge, Va., assignor to Atlantic Research Corporation, Alexandria, Va.

Filed July 18, 1972, Ser. No. 272,953
Int. Cl. H04m *3/22*
U.S. Cl. 179—1 MN **13 Claims**



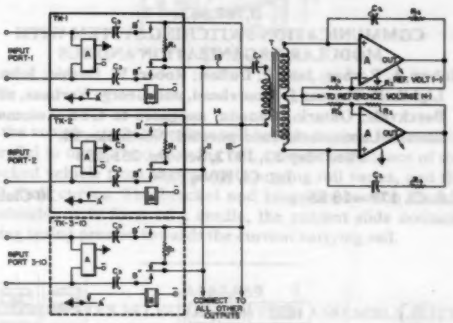
The embodiment of the modulation identification system which is disclosed provides a positive indication as to which of data or voice signals are present on the communication line being monitored or whether there is an absence of signals on that line. A pair of one-shots are included which are alternately triggered to their semi-stable states by the zero-crossings of the input signals. The duration of these semi-stable states can be adjusted so that their duration is slightly greater than the half-period of the lowest frequency signal which will be encountered. The output of both one-shots are applied to a NOR gate. The result is that for data signals, the output of the NOR gate is a logic 0 and for a no-signal condition the output is a logic 1. For voice signals, the output switches between 0 and 1, representing bursts of speech and the pause between speech. Three output channels one for each signal condition, individually process these logic signals in combination with clock pulses applied by a clock source to give a positive indication of the input signal conditions. The frequency of the clock is preferably selected so that there will be at least two seconds between clock signals. This period of time is generally long enough to encompass most uninterrupted bursts of speech and pauses so that the data and no-signal channels will not be falsely actuated when voice is present, yet brief enough to give a fairly rapid system response to a change in signal condition.

3,767,861

3 TO 10 PORT CONFERENCE CIRCUIT

Robert P. Dimmer, Lombard, Ill., assignor to GTE Automatic Electric Laboratories, Incorporated, Northlake, Ill.

Filed Aug. 31, 1972, Ser. No. 285,180
Int. Cl. H04m *3/40, 3/56*
U.S. Cl. 179—1 CN **6 Claims**



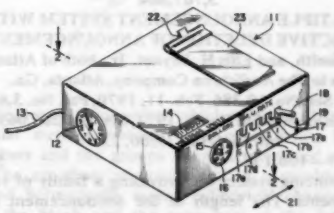
A conference circuit for multiple telephone subscribers including a plurality of input ports for connection to a common transmission line, means for selectively connecting each of the input ports to the transmission line, means for connecting an impedance associated with each of the input ports to the transmission line when the input port is disconnected from the transmission line and for disconnecting the impedance when the associated input port is connected to the transmission line, a shunt type negative impedance converter including a pair of operational amplifiers connected in a modified push-pull configuration to the transmission line, each amplifier having inverting and non-inverting input terminals and an output terminal, negative feedback means coupled from the output terminal to the inverting input terminal, and positive feedback means coupled from the output terminal to the non-inverting terminal, the positive feedback means including an impedance sufficient to prevent oscillation of the operational amplifier regardless of the number of input ports connected to the transmission line.

3,767,862

TELEPHONE-CONSUMER MESSAGE UNITS COMPUTER

Gerald Grushow, 14 Dartmouth Dr., Plainview, N.Y.

Filed Apr. 5, 1972, Ser. No. 241,230
Int. Cl. H04m *15/18*
U.S. Cl. 179—7.1 R **4 Claims**



A device utilizable by a person desiring to maintain a personal reasonably accurate record of a business-month's billing

as based on message-unit rates, on the non-long distance areas telephone in or into, the number of telephone calls made from the particular telephone, in a preferred embodiment including a constant rate motor and driven shaft having pre-programmed different numbers of slots located at different distances from the shaft end, with a contact ridable along the rounded shaft and registerable of a charge upon dropping into a slot, and also initially registerable of a predetermined charge when being initially moved to and aligned with a particular rate position selected by the telephone user on getting through a telephone call, the charges being cumulatively registered until manually reset to zero.

3,767,863

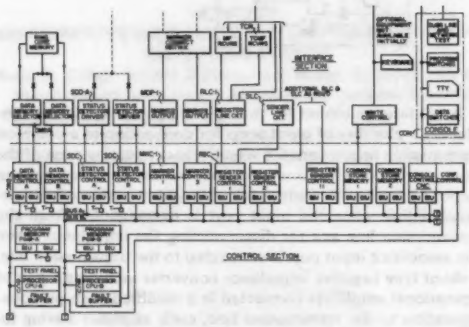
COMMUNICATION SWITCHING SYSTEM WITH MODULAR ORGANIZATION AND BUS

Robert A. Borbas; John P. Dufton; Robert W. Duthie; John T. Lighthall; Thomas J. Moorehead, and George Verbaas, all of Borckville, Ontario, Canada, assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed May 22, 1972, Ser. No. 255,485

Int. Cl. H04q *3/54*

U.S. Cl. 179—18 ES **20 Claims**



The system has duplicate central processors, each having its own bus. Subsystem modules include program memory, data base memory, status detector, register-senders, markers, etc., each having one or more memory word stores. Bus interface units of identical construction are interposed between the subsystem modules and the busses. Some modules such as program memory are duplicated and each connected to one bus, while others are connected via their interface unit to both busses. All memory addresses are accessed from a processor via its bus, each address being effective to select only one interface unit, and the complete address being then passed to the subsystem module to read or write a data word.

3,767,864

MULTIPLE ANNOUNCEMENT SYSTEM WITH SELECTIVE DELETION OF ANNOUNCEMENTS

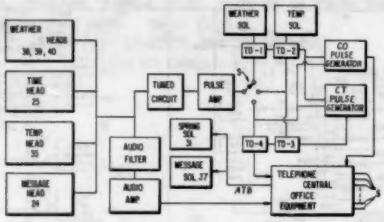
Leary W. Smith, and Ellis H. Bryant, Jr., both of Atlanta, Ga., assignors to The Audichron Company, Atlanta, Ga.

Division of Ser. No. 10,386, Feb. 11, 1970, Pat. No. 3,668,326. This application Dec. 8, 1971, Ser. No. 206,069

Int. Cl. G11b *19/00, 23/30*

U.S. Cl. 179—100.1 R **5 Claims**

An announcing system for providing a family of recorded announcements. The length of the announcement cycle is shortened in response to the number of subscriber lines waiting to be connected to the announcing system being in excess of the number of subscriber lines which can be connected to the announcing system by the telephone central office equipment. However, the announcement system also provides for selected segments of an announcement without changing the



length of the announcement cycle or making the deletion apparent to anyone listening to the announcement.

3,767,865

HIGH SPEED FOIL DISC RECORDING SYSTEMS

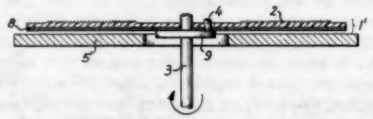
Eduard Schuller, Wedel/Holstein; Gerhard Dickopp, and Wolfgang Rainer, both of Berlin, all of Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Germany

Filed Dec. 22, 1970, Ser. No. 100,724

Claims priority, application Germany, Dec. 23, 1969, P 19 65 788.4

Int. Cl. G11b *3/70*

U.S. Cl. 179—100.4 R **6 Claims**



In a system employing a thin foil disc carrying recorded information signals and rotating at a high speed above a stationary support from which it is separated by a stabilizing air cushion and in which an electrostatic charge is formed on the disc, means for substantially preventing the formation of an induced opposite polarity charge at the surface of the support which faces the disc.

3,767,866

TAKE-UP DEVICE FOR MAGNETIC TAPE DUPLICATING SYSTEM

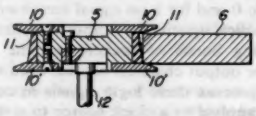
Yutaka Higashida, Nishinomiya; Kaoru Imanishi, Neyagawa; Nobushige Kouriki, Katano, and Sadao Mizuno, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 6, 1972, Ser. No. 241,578

Claims priority, application Japan, Apr. 9, 1971, 46/27307; Sept. 9, 1971, 46/82087; Nov. 12, 1971, 46/106224

Int. Cl. G11b *15/60*

U.S. Cl. 179—100.2 E **9 Claims**



A magnetic tape duplicating system where a master tape carrying recorded information and a slave tape are taken up

on the same take-up reel with the magnetic faces of said tapes in contact with each other for impressing a transfer field on said tapes in the taken-up state, said system comprising a take-up reel without flange, both said tapes being concurrently taken up on said take-up reel, and a tape driven means having at least one flange and provided with a peripheral resilient ring, both said tapes being passed round said tape drive means for a portion of the periphery of said drive means subtending a predetermined angle, both said tapes being pressed against the periphery of said drive means, said tapes being adapted to be brought into contact with said flange, whereby excellent alignment of the lower edges of said tapes may be obtained to provide for increased fidelity of duplication.

3,767,867

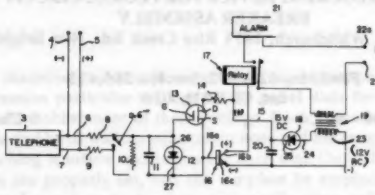
BURGLAR ALARM ACTUATED BY CUT TELEPHONE WIRE

Edmund C. Altenberger, Box 595 Post Rd., Bernardsville, N.J.

Filed July 27, 1972, Ser. No. 275,566

Int. Cl. H04m *3/22*

U.S. Cl. 179—175.25 **10 Claims**



A burglar alarm which is actuateable by the cutting of a telephone set wire such as located outside of a residence home, the alarm relay switch-actuating circuit being connected to either battery or DC-rectified AC-power source, the detector and actuating circuitry of a preferred embodiment including positive and negative leads connectable to telephone wire contacts of corresponding polarity, each lead including adjacent to the respective contacts, in series, a resistor, the respective resistors being connected to different terminals of each of a third resistor, a capacitor, a zener diode, and a field effect transistor (FET), the negative lead being connected to the FET gate terminal and to the diode such that electrons are flowable solely from said negative lead to said positive lead, and said postive lead being connected to each of the FET source and to a base of typically an NPN transistor, the FET drain being connected in series through a fourth resistor and a relay switch coil to the NPN collector, the relay switch being actuateably closeable of an alarm power circuit, the NPN emitter being connected to one terminal of a second capacitor and to a DC power source terminal of the relay alarm switch-actuating circuit, and the remaining relay switch being connected to each of the remaining terminal of the second capacitor and the remaining coil lead to the relay switch, the relay alarm switch-actuating circuit preferably including, in series, the relay actuating coil, the NPN transistor, a step-down transformer coil, and a rectifier diode permitting DC current to flow toward each of said collector and said drain.

3,767,868

ELECTRIC CURRENT COLLECTOR SHOE

Rolf Storrer, Obergerlafingen, Switzerland, assignor to Von Roll AG., Gerlafingern, Switzerland

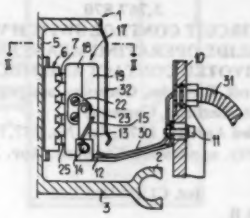
Filed Mar. 31, 1972, Ser. No. 240,008

Claims priority, application Switzerland, Apr. 5, 1971, 4913/71

Int. Cl. B60l *5/00*

U.S. Cl. 191—49 **5 Claims**

A housing, holding sliding contacts, projects from the side of a tracked vehicle, the slide contacts engaging a current carrying member such as a current rail. The housing is mounted with a hinge connection to a link, the hinge itself being in turn pivoted to a bracket extending from the vehicle or the like towards the current carrying member. The hinges have hinge axes which are substantially parallel to the direction of travel



of the vehicle, so that the shoe will be able to pivot and remain parallel to the current carrying rail, even if the distance of the tracked vehicle from the current carrying rail varies, and the rail itself curves. The bracket and hinge connection therein preferably is in form of a cradle, the current slide contacts being spring pressed towards the current carrying rail.

3,767,869

COORDINATES SELECTION SWITCH ASSEMBLY WITH SLIDER BAR ACTUATOR WITH PERMANENT MAGNETS ACTIVATING RECIPROCATING MERCURY WETTED CONDUCTIVE PLUNGER ENGAGING MULTI-PLANAR FIXED CONTACT ARRAY

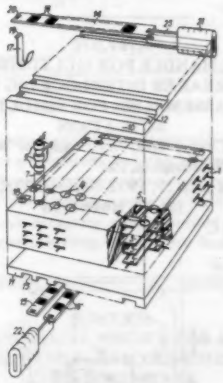
Pierre M. Lucas, Issy-les-Moulineaux; Auguste A. Sautel, Bonneuil-sur-Marne; Jacques Chauvin, Verrieres-le-Buisson; Daniel J. Serezac, Bretigny-sur-Orge, and Jack B. Cibert, Creteil, all of France

Filed Sept. 20, 1971, Ser. No. 181,945

Claims priority, application France, Sept. 23, 1970, 7034389

Int. Cl. H01h *63/34, 36/00*

U.S. Cl. 200—1 R **3 Claims**



Coordinates selection switch which comprises two groups of rectangular metal crossbars, each group being formed of parallel bars and the groups lying in interlaced equidistant levels. The crossbars are contained in a moulded plastics block and hermetically sealed cylindrical channels extend through the block and the cross-bars at the intersections thereof. Pistons made of magnetic material and having metal rings are disposed in the channels. Two groups of displaceable and rectangular operating bars are disposed on each side of

the block and magnets are inserted into these operating bars at the same spacing from one another as the channels. The outside surface of the piston rings and the crossbar edges which appear in the channels are wetted by mercury for providing good contacts.

3,767,870

MULTIPLE CIRCUIT CONTROL SWITCH WITH SPRING BIASED SLIDE OPERATING MEANS ENGAGING PIVOTED CONTACT ASSEMBLY

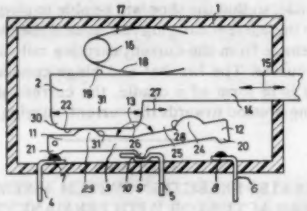
Ewald Marquardt, Rietheim, Germany, assignor to Firma J. & J. Marquardt, Rietheim, Germany

Filed Apr. 26, 1972, Ser. No. 247,756

Claims priority, application Germany, Apr. 30, 1971, P 21 21 421.1

Int. Cl. H01h *19/46*

U.S. Cl. 200—6 R **5 Claims**



An electric switch with a contact bridge pivotable between two end position and constructed as a double-armed lever, at least two fixed contacts being bridged in at least one of the said end positions, wherein the pivoting range of the contact bridge contains an operating element which is displaceable between two end positions, and which in one of these latter is mainly associated with one lever arm, while in the other end position it is mainly associated with the other lever arm, and which in the zone of its end positions forms a stop device for the rotation of the lever arm in question, while the particular lever arm which is free at the time, or some element connected therewith, extends into the path of motion of the said operating element.

3,767,871

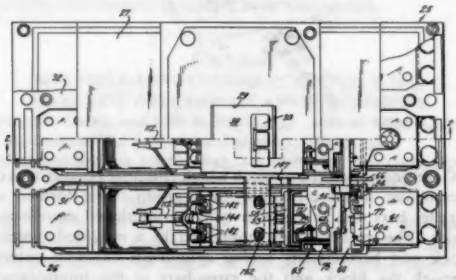
INTERNAL HANDLE FOR MULTI-MECHANISM CIRCUIT BREAKER INTERLOCKING MULTIPLE SWITCH ASSEMBLIES FOR SIMULTANEOUS ACTUATION

Albert Strobel, Cherry Hill, N.J., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed July 27, 1972, Ser. No. 275,578

Int. Cl. H01h *9/26*

U.S. Cl. 200—50 C **12 Claims**



A molded case circuit breaker having multiple contact operating mechanisms is provided with an internal handle connected directly to the operating members of all of the mechanisms. The central portion of the handle is provided with a stubby bifurcated extension that projects through an opening in the molded housing. A roller freely mounted between the sections of handle extension provides means through which operating forces are transmitted to the handle. The mechanism of the center pole is connected to the handle by means of pins extending from the mechanism into recesses in each portion of the stubby extension, with these recesses extending into close proximity with recesses wherein a bearing pin supporting the force transmitting roller is disposed.

The handle also carries spaced insulating barriers disposed on each side of the center pole operating mechanism and inboard of the housing partitions defining the compartment for the center pole. These barriers cooperate with insulating barrier discs floatingly mounted on the transverse tie bar interconnecting the movable contacts of all poles to limit flow of hot gases from the center pole to the outer pole during high current interruption.

3,767,872

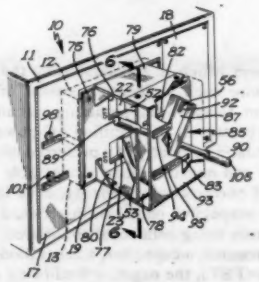
INTERLOCKING DEVICE FOR PLURAL CIRCUIT BREAKER ASSEMBLY

Norton W. Whitchurch, 2871 Rice Creek Rd., New Brighton, Minn.

Filed May 22, 1972, Ser. No. 255,433

Int. Cl. H01h *9/26*

U.S. Cl. 200—50 C **9 Claims**



A fast transfer electrical switching mechanism for manually switching a large electrical load between a standard power source and an emergency power source without the standard and emergency power sources being simultaneously connected to the load and within a short time interval which will not cause stoppage of or interference with normal load operation. A housing supports a pair of commercially available molded case electric circuit breakers mounted in side-by-side relationship, one breaker arranged for connection between load and standard power source and the second between load and emergency power source, the breakers being characterized in that the off-on control handle of each breaker must be swung through a larger section of its arc to open the spring loaded electrodes of the breaker than to close them. Each breaker is coupled to an interlocking device which prevents electrical contact between the electrodes of one breaker if the electrodes of the second breaker are closed. A handle assembly, rotatable by an operator and mechanically coupled to the breaker handles permits the operator to simultaneously swing the handles of both breakers, placing the handle of the open breaker in an on position where its electrodes are spring loaded to close but are prevented from closing by the interlocking device until further manual rotation of the handle assembly opens the closed breaker and releases the interlocking device.

3,767,873

CONTROL PANEL WITH DIAL SETTING TEMPLATE

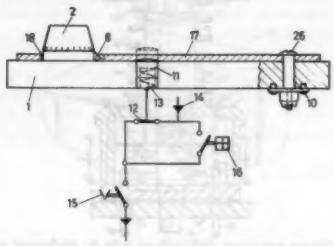
Hermann Nesgen, Freiherr von Sternstrasse 32, Wichl, Germany

Filed Aug. 30, 1972, Ser. No. 284,721

Claims priority, application Germany, Sept. 2, 1971, P 21 44 003.9

Int. Cl. H01h 9/20, 33/46

U.S. Cl. 200—50 A 6 Claims



A machinery control panel with dial setting templates which determine particular settings of the panel dials for an error-free reestablishment of these settings. Each control panel dial has a dial head with an adjustment nose and the template has a matching aperture and recess for each dial. Only after all the dials are properly set, can the template be emplaced on the control panel so as to close a normally open safety switch which permits startup of the machinery.

3,767,874

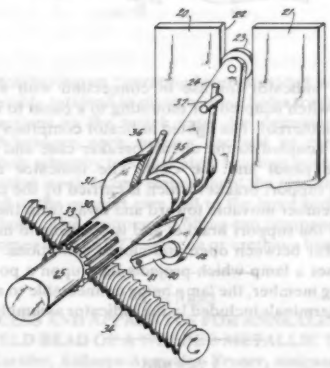
SAFETY MANUAL RACKING MECHANISM FOR DRAWOUT SWITCHGEAR

George A. Wilson, Pineville, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

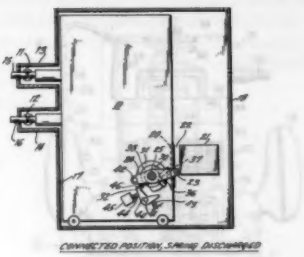
Filed Aug. 18, 1972, Ser. No. 281,702

Int. Cl. H01h 9/20

U.S. Cl. 200—50 AA 9 Claims



A circuit breaker racking mechanism has a toroidal spring connected between an inner and outer racking shaft. The inner shaft is connected to the cubicle within which the circuit breaker truck is moved while the outer shaft is connected to the manual racking mechanism. The spring serves as a direct mechanical force transmitting connection between the inner and outer racking shafts when the breaker which enters the cubicle is moved to the test position. After the breaker reaches the test position, the inner racking shaft is latched so that continued racking toward the connected position charges the spring connection between the two racking shaft members. The latch may be remotely defeated to release the spring, thereby to complete the racking of the breaker to its connected position under the influence of the charged spring with operating personnel in a remote position.



3,767,875

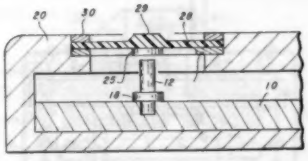
DIAPHRAGM TYPE PUSHBUTTON SETTING SWITCH WITH FIXED CONTACT SEMICONDUCTOR SUBSTRATE SUPPORT

Paul E. Schneikart, Lewisville; Roy C. Murdock, Plano, and Job H. Day, Carrollton, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 19, 1972, Ser. No. 264,217

Int. Cl. H01h 13/64

U.S. Cl. 200—52 R 2 Claims



Disclosed is a setting switch for electronic watches comprising a rigid contact pin mounted on the electronic substrate of the watch and a flexible spring contact mounted in an aperture of the watch case in registration with the rigid contact. A flexible diaphragm and retaining ring mounted over the spring contact in the aperture form a moisture seal with the watch case.

3,767,876

REMOTE MECHANICAL SWITCH FOR ACTUATING A POWER TOOL WITH PARTICULAR MICROSWITCH LOCATING MEANS

William A. Batson, Pickens, S.C., assignor to The Singer Company, New York, N.Y.

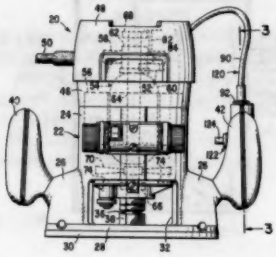
Filed Nov. 17, 1972, Ser. No. 307,694

Int. Cl. H01h 17/06, 9/06

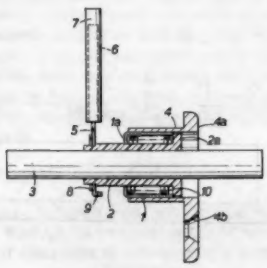
U.S. Cl. 200—157 4 Claims

A remote mechanical switch for actuating a power tool, such as a router, wherein the mechanical switch is mounted in a control handle connected to the housing of the router. A shielded rod is connected between the housing and the control handle to engage the actuator of a microswitch that is electrically connected to operate the electric motor of the router.

The rod places the microswitch in a normally off position. A trigger control is mounted in the control handle and connected to the rod, so that on operation thereof, the rod will be moved away from engagement with the microswitch to cause the same to be actuated.



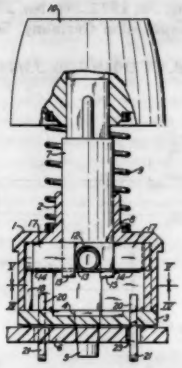
3,767,877
PUSHBUTTON SWITCH WITH ACTUATOR ADJUSTABLE BY INTERFERENCE FIT
Leonard Palman, 5 Windsor Close, Hendon La., London, England
Filed Dec. 13, 1971, Ser. No. 207,296
Int. Cl. H01h *13/52*
U.S. Cl. 200—159 R **2 Claims**



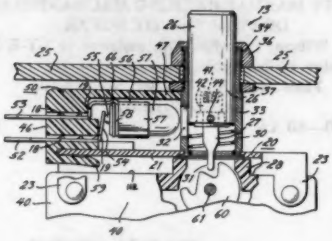
An electrical switch comprising three members, the first and second of which are relatively movable against a biassing force to make and/or break an electrical circuit. The third member is an interference fit within a bore formed in one of the other members and constitutes an adjustable extension thereof, and in turn forms an abutment whereby the switch is operable. The electrical switch in accordance with the present invention finds particular application as a courtesy light switch in automobiles, refrigerators, etc.

3,767,878
KEYBOARD SWITCH
Allan J. Sykora, Cary, N.C., assignor to Stackpole Components Company, Raleigh, N.C.
Filed Sept. 21, 1972, Ser. No. 290,980
Int. Cl. H01h *13/52, 1/24*
U.S. Cl. 200—159 R **6 Claims**

A switch case has a top provided with a central opening in which slides the stem of a plunger that has a foot inside the case and a cap on its upper end. A spring normally holds the plunger in its upper position with its foot adjacent the top of the case. The foot carries a bridging contact formed from a spring having free end portions extending away from the opposite sides of the foot to form movable contacts that engage stationary contacts in the case when the plunger is depressed.



3,767,879
CIRCUIT BREAKER WITH IMPROVED LIGHTED INDICATOR
Ronald Nicol, Trenton, N.J., assignor to Heinemann Electric Company, Trenton, N.J.
Filed Dec. 1, 1971, Ser. No. 203,583
Int. Cl. H01h *9/16*
U.S. Cl. 200—167 A **34 Claims**

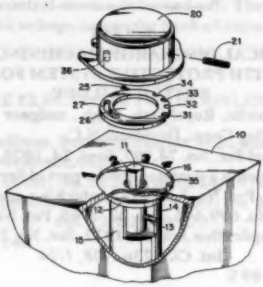


A lighted indicator for use in connection with a circuit breaker or switch adapted for mounting to a panel to indicate the condition thereof. The lighted indicator comprises a unitary assembly coupled to the circuit breaker case and located between the panel and the case. The indicator attaches directly to a support bracket which is carried by the case. An operating member movable toward and away from the case is mounted on the support bracket and is operable to move the circuit breaker between open and closed conditions. The indicator houses a lamp which projects light upon a portion of the operating member, the lamp being connectable to a source via contact terminals included in the indicator assembly.

3,767,880
ROTARY SWITCH WITH SELECTIVELY LIMITED POSITIONING
Charles W. Austin, Williamsville, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.
Filed Aug. 14, 1972, Ser. No. 280,358
Int. Cl. H01h *3/20, 9/20*
U.S. Cl. 200—169 R **6 Claims**

Rotary indexing switch which can be selectively limited for switching through one, two, three, or four positions. A disk is

positioned between the base member and the knob of the switch mechanism. One of four spaced apart indentations in the disk is selected to engage a pin affixed to either the knob



or the base member. A slot in the disk engages another pin affixed to whichever of the knob or base member does not have the first pin.

3,767,881

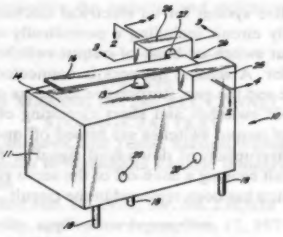
RESILIENT SWITCH BEARING

Thomas D. Sharples, Atherton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Mar. 6, 1972, Ser. No. 232,011

Int. Cl. H01h *3/04*

U.S. Cl. 200—172 A **7 Claims**



A switch having an operating lever provided with support ears pivotably retained in pivot-bearing holes formed in bearing projections on the switch case. An elastomeric filling is provided between each support ear and its corresponding bearing hole whereby torsional pivot bearings are provided for the operating lever. In one embodiment the elastomeric filling is bonded to the support ears and to the inner surfaces of the bearing holes. The elastomeric filling can comprise any suitable elastomer such as RTV silicone or urethane based rubber.

3,767,882

PROCESS AND APPARATUS FOR ANNEALING THE WELD BEAD OF A WELDED METALLIC TUBE

Andre Garnier, Aulnoye-Aymeries, France, assignor to Vallourec Usines a Tubes de Lorraine-Escaut et Vallourec Reunies, Paris, France

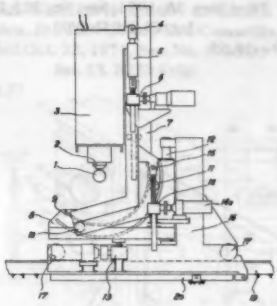
Filed Sept. 14, 1971, Ser. No. 180,350

Claims priority, application Luxembourg, Sept. 17, 1970, 61704

Int. Cl. H05b *5/08*

U.S. Cl. 219—8.5 **2 Claims**

An apparatus for treating continuously welded metallic tubes comprises a series of longitudinal inductors mounted on movable carriages which are adapted to be pivotal co-axially with respect to the tube in response to the angular position of



the weld bead formed on the tube so that each of the inductors remains centred on this weld bead.

3,767,883

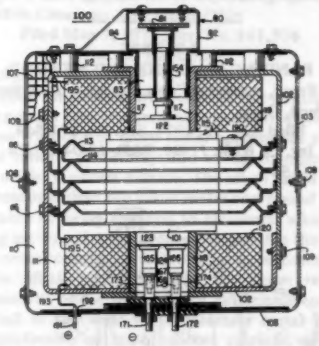
CONTROL AND POWER SUPPLY SYSTEMS FOR MAGNETRON DEVICES

James E. Staats, Louisville, Ky., assignor to General Electric Company

Filed Mar. 20, 1962, Ser. No. 181,144

Int. Cl. H05b *9/06*

U.S. Cl. 219—10.55 **33 Claims**



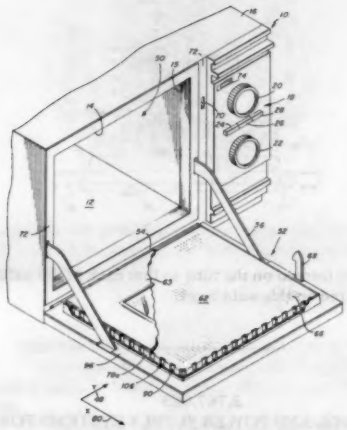
An R.F. generator for a microwave heating apparatus includes a low plate voltage magnetron device in combination with a power supply system comprising a voltage doubler and rectifier circuit consisting essentially of capacitors and rectifiers providing a galvanic connection between the magnetron and a single phase, 60 Hz., 220–250 volt line-to-line, three-wire Edison supply source, and supplying D.C. plate voltage of approximately 570 volts to the input terminals of the magnetron which in turn produces R.F. power in the range of 700 watts at 915 mHz. A timer-control circuit is provided to insure heating of the magnetron cathode at a first rate prior to the application of plate voltage and at a second rate after the application of plate voltage.

3,767,884

ENERGY SEAL FOR HIGH FREQUENCY ENERGY APPARATUS

John M. Osepchuk, Concord, and James E. Simpson, Waltham, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Nov. 30, 1971, Ser. No. 203,227
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 57 Claims



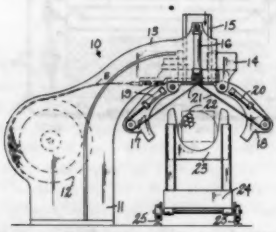
A high frequency oven having a door sealed to the oven by a seal which prevents the escape of high frequency energy between the door and the oven by acting as a choke to energy modes attempting to pass across the seal in which excitation of energy in a band of frequencies including the desired operating frequency range of the oven is controlled along the seal. An energy absorbing gasket surrounds the seal to absorb any energy passing outwardly from the energy seal.

3,767,885

BANDING MACHINE AND METHOD

George R. Fryer, Ansonia, Conn., assignor to Fryer Corporation, Oxford, Conn.

Filed Aug. 13, 1971, Ser. No. 171,544
Int. Cl. B23k 11/00; B65b 13/04, 13/24
U.S. Cl. 219—56 15 Claims



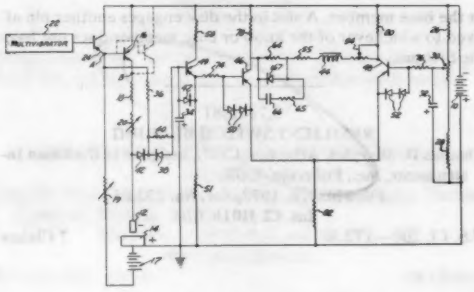
This specification discloses a wire banding machine which comprises a base member, a circular guideway and wire feeding and tensioning means. Wire is fed across the base and past an article to be bound and then around the guideway until the leading edge thereof strikes a stop. At this time, clamping means on a first member on the base clamps and holds the leading end of the wire. Then the feeding means is reversed to tension the wire about the article. At the end of the tensioning step a second member on the base clamps the wire and moves across a severing means into alignment with the leading edge. As alignment with the leading edge is approached the second member slightly retracts to allow such alignment to take place and then is moved inwardly to bring the ends into contact as a welding current is passed across the aligned ends to effect a weld therebetween.

3,767,886

ELECTRICAL DISCHARGE MACHINING POWER SUPPLY WITH PROTECTIVE SYSTEM FOR OUTPUT SWITCH FAILURE

Kurt H. Sennowitz, Royal Oak, Mich., assignor to Colt Industries Operating Corp., Davidson, N.C.

Division of Ser. No. 74,997, Sept. 24, 1970, Pat. No. 3,665,144, which is a continuation-in-part of Ser. No. 874,574, Nov. 6, 1969, Pat. No. 3,548,142, which is a continuation-in-part of Ser. No. 699,443, Jan. 22, 1968, Pat. No. 3,524,036.
This application Jan. 28, 1972, Ser. No. 221,738
Int. Cl. B23p 1/08, 1/14
U.S. Cl. 219—69 S 10 Claims



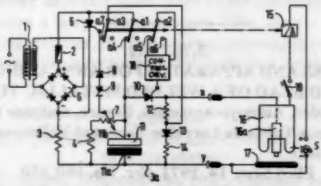
A protective system for an electrical discharge machining power supply circuit including a periodically operated electronic output switch or bank of output switches and a drive stage therefor. A sensing network is connected between the output stage and the gap. Responsive to failure of one or more of the output switches and short circuiting of the gap, the remainder of output switches are biased off and there is provided an interruption of down-feed signal in the servo feed control circuit causing a back-off of the servo system until the "failed" switch has been replaced in the circuit.

3,767,887

CAPACITOR-DISCHARGE STUD WELDING APPARATUS

Karl-Max Harder, Vaduz, Liechtenstein, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Apr. 6, 1972, Ser. No. 241,667
Claims priority, application Germany, Apr. 14, 1971, P 21 17 996.4
Int. Cl. B23k 9/20, 11/04; H02h 3/28
U.S. Cl. 219—98 29 Claims



In the stud welding apparatus disclosed a battery or bank of capacitors in the main welding line stores welding energy. A current supply unit charges the bank of capacitors. An elec-

tronic switch applies the energy from the bank of capacitors to welding electrodes. A control device, which can be turned on and off, renders the electronic switch conductive when it is turned on. A safety circuit reduces the output voltage of the current supply unit when the electronic switch happens to turn on while the control device is turned off. The safety circuit also reduces the voltage across the bank of capacitors.

3,767,888

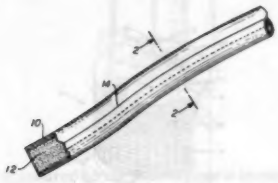
AIR WIRE ELECTRODE FOR STAINLESS STEEL WELDING

Cornelius J. Sullivan, Berkeley Heights, N.J., assignor to Airco, Inc., New Providence, N.J.

Continuation of Ser. No. 31,638, April 24, 1970, abandoned. This application Apr. 29, 1971, Ser. No. 138,790

Int. Cl. B23k *35/22*

U.S. Cl. 219—146 **12 Claims**



An air wire electrode comprising an outer sheath of mild steel having a central core constituting about 50 percent by weight of the electrode; the core being composed of stainless steel alloying ingredients and components of a lime-rutile-fluorspar flux system for gasless slag-shielding, the lime being present as part of a prefused lime-rutile mixture of suitable proportions, including the eutectic and stoichiometric compositions.

3,767,889

METHOD OF MAKING INTERCELL CONNECTIONS IN STORAGE BATTERY

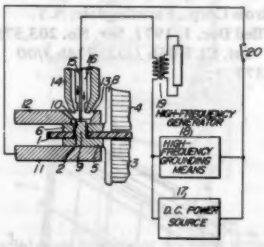
Ichiro Sano, Kanagawa, and Testuo Sakurai, Fujisawa, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Feb. 14, 1972, Ser. No. 226,038

Claims priority, application Japan, Feb. 17, 1971, 46/7526; Feb. 17, 1971, 46/7257; May 26, 1971, 46/36540

Int. Cl. B23k *9/16, 9/24*

U.S. Cl. 219—137 **7 Claims**



A method of making an intercell connection in a storage battery comprising connecting a pair of connectors to two cell element assemblies respectively on opposite sides of a battery partition wall, providing a connecting projection of one of the connectors so that it extends through an opening in the partition wall into an aperture in the other connector, pressing these two connectors against the partition wall, and welding the connecting projection to the inner wall of the aperture in the other connector by carrying out inert gas shielded arc welding on one side of the partition wall.

3,767,890

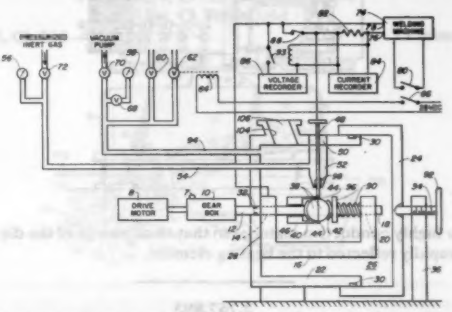
METHOD AND APPARATUS FOR FABRICATING GAS PRESSURIZED HOLLOW SPHERES

Baxter C. Madden, Jr., 680 N. Loop Dr., Camarillo, Calif.

Filed Oct. 22, 1971, Ser. No. 191,703

Int. Cl. B23k *9/00*

U.S. Cl. 219—137 **11 Claims**



An apparatus and method for joining two identical flanged hollow hemispheres while exposed to an inert gas under pressure to produce a hollow sphere containing pressurized gas. The hemispheres are supported within a pressurized chamber with flanges butting, and rotated so that the flanged portion passes adjacent a welding electrode which effects a welded seam and produces a hermetically sealed sphere containing a gas under pressure.

3,767,891

ELECTRODE FOR ARC WELDING IN AIR

Robert Claire Haverstraw, Kirtland, and George Gideon Landis, Pepper Pike Village, both of Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio

Filed May 7, 1971, Ser. No. 141,376

Int. Cl. B23k *35/22*

U.S. Cl. 219—146 **41 Claims**

An electrode for electric arc welding in air containing alkali metal composites which comprise an alkali metal oxide in combination with one or more metal compounds of acidic or amphoteric nature, preferably iron oxide, manganese oxide, aluminum oxide or silicon dioxide. The alkali metal composite is less hygroscopic than the alkali metal compound it contains and is capable of being reduced to elemental alkali metal in the welding arc by reducing agents contained in the electrode. The alkali metal composite is provided in sufficient quantity so that the alkali metal obtained therefrom reduces the nitrogen content of the weld metal sufficiently to suppress nitrogen boil in the weld metal. Certain metal oxides and fluorides, preferably oxides of silicon, calcium, or aluminum and fluorides of calcium, barium, lithium or sodium are moisture barrier materials and may be included in the alkali metal composite to further enhance its resistance to absorption of moisture from the air.

3,767,892

THERMAL BRIDGE FOR MOLDING MACHINE

Thaddeus J. Armstrong, Elmwood Park, and John Ohlhaver, Deerfield, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

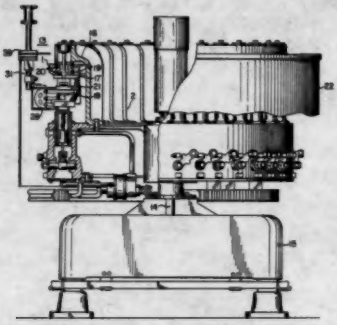
Division of Ser. No. 809,898, March 24, 1969, Pat. No. 3,635,619. This application July 29, 1971, Ser. No. 167,285

Int. Cl. H05b *1/00*

U.S. Cl. 219—243 **11 Claims**

A thermal bridge for an electrically heated compound molding machine wherein the heat transfer from the molding

plug is reflected to a heating assembly through a thermal transfer element or thermal plug. The thermal plug is made of



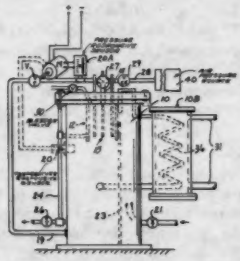
a highly conductive material so that small swings of the die are rapidly reflected to the heating element.

3,767,893

METHOD OF BALANCING CURRENT VOLUME BASED ON TEMPERATURE SETTING FOR AN ELECTRODE-TYPE LIQUID HEATER FOR A BOILER

Edward J. Zeitlin, Purdys, and Lee Leighton, Mohegan Lake, both of N.Y., assignors to Edward J. Zeitlin, Purdys, N.Y.

Filed Aug. 30, 1971, Ser. No. 175,816
Int. Cl. H05b *3/60, 1/02*
U.S. Cl. 219—287 **1 Claim**



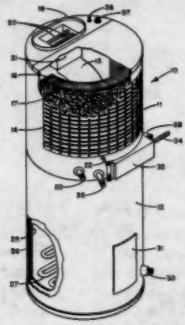
An electrode surge tank system of heating fluid (water) in a boiler or tank in which there is a central inverted non-conductive heat generating chamber with an open bottom positioned at the top of the boiler. A plurality of spaced electrodes protrude downward into said heat generating chamber so that the electrodes will be immersed to a maximum degree when the boiler or tank is filled. A circulating pipe connects the top of the inverted chamber with the lower portion of the tank or boiler to convey heated vapor (steam) to the lower portion of the tank or boiler to thus heat the boiler fluid. A modulating valve is provided in the circulating pipe line to control the flow of heated vapor (steam) and thus control the heat input. The closing of the modulating valve (by a temperature responsive element) also provents the escape of vapor from the top of the inverted heat generating chamber and produces a buildup of vapor pressure therein which in turn forces the fluid level therein to drop. The lowering of the fluid level in the inverted chamber (surge tank) reduces the degree of submergence of the electrodes and thus the degree of generation of heat and when the electrodes are no longer submerged the heat generation stops. As the fluid temperature in the boiler drops, the vapor pressure above the fluid also drops allowing the fluid level to rise and the cycle of fluid he ting continues. Thus a desired fluid temperature may be maintained. To prevent a full electric surge load when starting, there is provided an auxilliary air pressure system connected to the surge chamber so that with a control valve the air pressure may be transferred into the upper portion of the surge chamber, thus forcing the level of the fluid therein to drop and reducing the degree of submergence of the electrodes to any desired degree to thus reduce the power demand when starting its heat generating cycle.

3,767,894

COMBINATION ELECTRIC WATER HEATER AND ELECTRIC SPACE HEATER

Isaac Berger, Hacienda Heights, Calif., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 18, 1972, Ser. No. 290,193
Int. Cl. F24h *3/04, 1/20*
U.S. Cl. 219—321 **7 Claims**



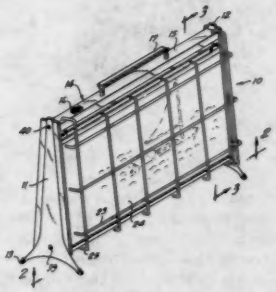
An electric water heater and an electric space heater are combined with a control system for supplying a combined demand-limited electric current. The control system is arranged to provide a predetermined desired priority to the various resistance heating elements in the combined system so as to limit the total electrical demand to less than the sum of the demands of all of the heater elements. The arrangement avoids the need for subdivided branch circuits with separate circuit breakers to comply with electrical codes.

3,767,895

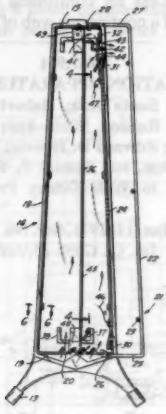
PORTABLE ELECTRIC RADIANT SPACE HEATING PANEL

Robert L. Needham, Bayside, N.Y., assignor to Infra-Red Circuits & Controls Corp., Farmingdale, N.Y.

Filed Dec. 1, 1971, Ser. No. 203,575
Int. Cl. H05b *1/02*; **F24h** *3/00*
U.S. Cl. 219—377 **3 Claims**



A portable electric heater includes side supports which hold a metallic heating panel having a front face provided with a

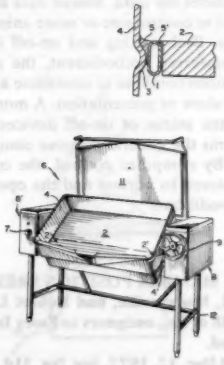
decorative baked enamel design. The rear face of the heating panel has an insulative coating having a resistive heating grid deposited thereon which is connected to a source of current through a switch. A protective panel are spaced, respectively, from the front and rear of the heating panel. A sheet metal

back panel is secured to the side supports in spaced relation to the rear of the reflector panel. Convection air currents flow through the space between the heating panel and reflector panel and between the reflector panel and back panel to supply some heating air and to keep the heater relatively cool for safety.

3,767,896

FRYING PAN WITH A WELDED HOLLOW-CORE EXPANSION JOINT

John Justin Ryan, 14 Leander Ct., Toronto, Ontario, Canada

Filed Nov. 22, 1972, Ser. No. 308,702
Int. Cl. F27d *11/02*
U.S. Cl. 219—438 **8 Claims**



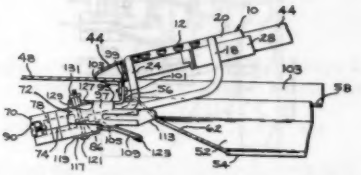
A commercial type heating or cooking utensil having a hollow-core expansion joint in the weld seam between the dissimilar metals. The weld seam between the dissimilar metals has a tendency to crack or break due to the continued heating and cooling cycle of the utensil when in operation. A hollow-core expansion joint capable of being welded to each of the metals is laminated between the stainless steel and cast iron of the utensil and when bonded thereto, serves to absorb the stresses induced when the utensil is heated and cooled alternately. Hence, the novel of construction provides an improved stainless steel-cast iron cooking utensil capable of withstanding the induced stresses of the heating and cooling cycles accompanying operation, without cracking or breaking at the weld seam.

3,767,897

PLUG-IN SURFACE HEATING UNIT WITH A TERMINAL BLOCK MOUNTING

Richard V. Prucha, Louisville, and Teamus Bowling, Fern Creek, both of Ky., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 4, 1972, Ser. No. 311,630
Int. Cl. H05b *3/68*
U.S. Cl. 219—451 **7 Claims**



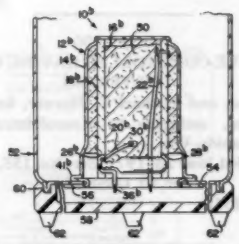
A plug-in electric surface heating unit for use in the cooktop of an electric range. The heating unit is a metal sheathed electrical resistance heating element in spiral form with radial, outwardly directed terminal portions in closed side-by-side relation. The invention relates to a fixed mounting bracket and a movable terminal block combination that is capable of limited relative vertical movement therebetween by virtue of a flexible coupling spring joining the two members.

3,767,898

CONTAINER WITH A COMBINED ELECTRIC HEATER AND THERMOSTAT UNIT

Robert M. Wells, 4271 Ira Rd., Akron, Ohio, and Alton R. Wells, 4573 W. Trade Winds Ave., Lauderdale-by-the-Sea, Fla.

Filed Dec. 29, 1972, Ser. No. 319,292
Int. Cl. F27d *11/02*
U.S. Cl. 219—441 **9 Claims**



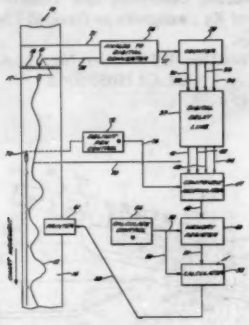
A container having an opening in the bottom thereof and a combined electric heater and thermostat unit secured to and extending through the opening of said bottom. The combined electric heater and thermostat unit including a metal case with an electric heater coil positioned on a tubular insulating core within the case, such insulating core having a pair of opposed slots formed in an end thereof adjacent the initially open end of the case, and a thermostat positioned within the case and received in the slots to extend across the bore of the insulation core and be directly connected to a terminal of the heater coil. The end of the case can be closed to mount the unit in any of several manners.

3,767,899

DIGITAL INTEGRATOR FOR EVALUATING OPERATOR SELECTED PORTIONS OF ANALOG CHART TRACES

Le Roy D. Barter, Fullerton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Aug. 7, 1972, Ser. No. 278,218
Int. Cl. G06k 15/02; G01d 9/22
U.S. Cl. 235—61.6 A 10 Claims



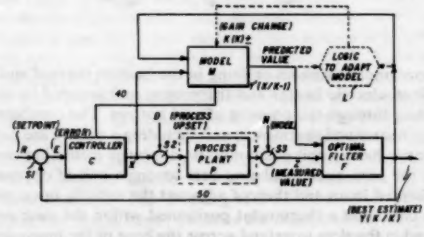
An operator-controlled system for selecting and evaluating components of an analog chart trace during a recording operation. The system calculates predetermined information, such as area under the trace, for one or more operator-selected components of the chart trace and prints out the calculated information upon the chart paper. Means are provided for monitoring the instantaneous position of the recording pen at successive intervals during recording. Other means are provided for retaining digital coded signals, proportional to the pen positions at such intervals, in a delay line for a predetermined delay interval. An operator-controlled delimit pen is provided downstream of the recording pen for selecting the beginning and end points of the desired components of the trace when a relatively full view of the trace is available. Operation of the delimit pen causes the delayed coded signals corresponding to a given component of the chart trace to be accumulated in a component accumulator and sent to a selected memory register. Upon completion of the recording operation the operator presses a calculate button to initiate calculation of desired information for each component of the chart trace, and to control the printing of the information upon the chart paper.

3,767,900

ADAPTIVE CONTROLLER HAVING OPTIMAL FILTERING

Henry H. Chao, and Michael G. Horner, both of Wisconsin Rapids, Wis., assignors to Consolidated Papers, Inc., Wisconsin Rapids, Wis.

Filed June 23, 1971, Ser. No. 155,739
Int. Cl. G05b 13/02
U.S. Cl. 235—151.1 28 Claims



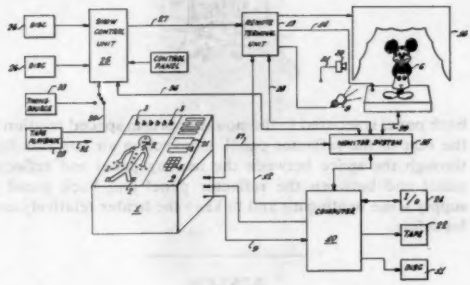
A self-adaptive controller for use in a control process for providing ordered changes in a manipulated process variable in response to measured changes in a controlled process variable having means for using measured and predicted values of the controlled variable to obtain an estimated value of the controlled variable which estimated value is used via a self-adaptive controller to determine the change in manipulated variable. The controller is described with reference to a paper manufacturing process for controlling the basis weight and moisture content of a continuous web of paper.

3,767,901

DIGITAL ANIMATION APPARATUS AND METHODS

Millard G. Black, Santa Ana; Robert A. Nater, Granada Hills; Charles E. Rolston, Santa Ana; William H. Roberts, Corona Del Mar; Edward D. Hoover, Placentia; William F. Gunning, Los Altos, and Robert P. King, Anaheim, all of Calif., assignors to Walt Disney Productions, Burbank, Calif.

Filed Jan. 11, 1971, Ser. No. 105,597
Int. Cl. G05b 15/100
U.S. Cl. 235—151 131 Claims



A digital data processing system for generation and storage of data for controlling animated figures, similar and associated devices. Via an input console, digital and analog positioning and control information is entered into the system. A programmed general purpose digital computer accepts the entered data, formats it properly, adds identifying information and retrievably stores the data. Stored data is selectively then read out and used to control one or more animated figures and related functions. Both analog and on-off devices are controlled. In the preferred embodiment, the animated figures and related functions combine to constitute a completely controlled animated show or presentation. A monitor system continually checks the status of on-off devices throughout the system and informs the general purpose computer of off-normal conditions. By computer control, the off-normal conditions may be restored to normal and the operator notified of the off-normal condition.

3,767,902

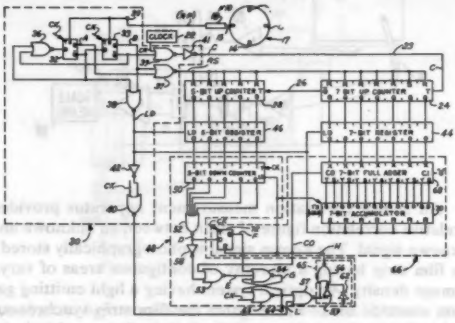
ENGINE MEMBER POSITION PREDICTOR

Bay E. Estes, III, Murrysville, and Robert L. Anderson, Jr., Pittsburgh, both of Pa., assignors to Essex International Inc., Fort Wayne, Ind.

Filed Dec. 12, 1972, Ser. No. 314,398
Int. Cl. G01c 7/30; H03k 23/00
U.S. Cl. 235—151.32 11 Claims

The disclosure describes a system for predicting the position of a moving member of an automobile engine, such as the crankshaft. The system includes means for generating reference pulses at discrete positions of the member, such as every 90° of rotation. The system is operated by a clock generator that generates clock pulses at a high rate compared to the rate at which the reference pulses are produced. In response to a reference pulse, the clock pulses are transmitted to a first counter. The first counter successively counts the

pulses to its maximum capacity, at which time an output pulse is transmitted to a second counter. When the next reference pulse is received, the number held in the first counter, the correction number, is loaded into a first storage register and the number held in the second counter, the position number, is loaded into a second storage register. The position number is loaded repeatedly into a down counter that is counted down by the clock pulses to produce a series of location pulses



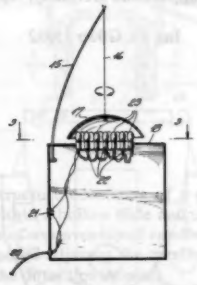
which predict the position of the rotating member. In response to each location pulse, the correction number is added to itself and the sum is stored in an accumulator. If the sum produced by an addition is equal to or greater than the capacity of the first counter at which an output pulse is produced, the transmission of the location signal is delayed for one clock pulse, thereby increasing the accuracy with which the location pulse predicts the position of the rotating member.

3,767,903

DECORATIVE LIGHTS

Clarence T. Dean, III, Cambridge, Md., assignor to The Raymond Lee Organization, Inc., New York, N.Y.; a part interest

Filed July 17, 1972, Ser. No. 272,567
Int. Cl. A47g *33/16*
U.S. Cl. 240—10 R **1 Claim**



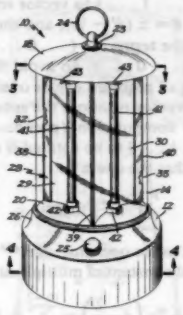
A decorative light source consisting of a group of incandescent bulbs covered by a suspended translucent plastic dome. Each of the incandescent bulbs is controlled by an independent blinker switch, so that the flashing of the lamps is in random order. The suspended plastic dome is fastened by a fine piece of thread from above. The dome is consequently set in a spinning motion by the thermal air currents generated by the heat of the flashing lamps, resulting in the projecting of random non-repetitive color patterns on the walls and ceiling of the room in which the lights are located.

3,767,904

IMPACT RESISTANT FLUORESCENT LANTERN

Gary L. Cook, Bloomington, Minn., assignor to Solid State Products, Inc., Minneapolis, Minn.

Filed May 19, 1972, Ser. No. 255,031
Int. Cl. F21l *7/00*; **H05b** *33/02*
U.S. Cl. 240—11.2 R **2 Claims**



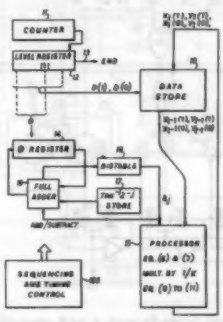
An impact resistant fluorescent lantern with a light transmitting shade positioned on a supporting base, the shade confronting a multiplicity of thin, flexible, rectangular, reflective panels therein which act as a deformable impact absorbing medium to resist breakage of fluorescent electric bulbs operatively mounted on the panels. Each panel is in a flexed condition extending arcuately between a pair of clips, the clips connecting the panel to adjacent panels and being in frictional engagement with the interior side of the shade, the flexed panels exerting a restoring force against the clips to urge the clips against the shade. A cap is positioned on the shade and means are provided to confine the shade and reflector between a cap and the base.

3,767,905

ADDRESSABLE MEMORY FFT PROCESSOR WITH EXPONENTIAL TERM GENERATION

Douglas Garde, Woburn, Mass., assignor to Solartron Electronic Group Ltd., Farnborough, England

Filed May 12, 1971, Ser. No. 142,586
Int. Cl. G06f *7/38*, *15/34*
U.S. Cl. 235—156 **11 Claims**



The fast Fourier transform is a known algorithm which can be written:

$$A_t({}^{b}m-1\ {}^{b}m-2\cdots{}^{b}m-1\cdots{}^{b1\,b0})=1/c[A_{b-1}(b_{m-1}\,b_{m-2}\ldots 0\ldots b_1b_0)+A_{b-1}(b_{m-1}\,b_{m-2}\ldots 1\ldots b_1b_0)\ \text{Exp.}\ (2\pi i\theta')]$$

where θ' is in radians/2π and is given by

$$\theta'=\pm(b_{m-1}\,2^{-t}+b_{m-2}\,2^{-t+1}+\ldots+b_{m-t}\,2^{+1});$$

where A_o is the set of $N = 2^m$ input data points identified by m indices b_{m-1} to b_o and where $b_{m-i} = 0$ or 1. The computation proceeds in a series of levels $1 \ldots l \ldots m$ at each of which the above equation represents 2^{m-1} equations corresponding to all different combinations of bits b other than b_{m-l}. The terms A_1 become complex. A_{m-l} gives the required terms of the Fourier series. This algorithm is engineered economically by subjecting the terms a_{l-1} (. . . 1 . . .) to vector rotation through the angle $2\pi\theta$, where $\theta = \pm(\theta' - \frac{1}{2})$, and then adding and subtracting them from the terms A_{l-1} (. . . 0 . . .) to generate A_l (. . . 1 . . . .) and A_1 (. . . 0 . . .). To avoid the need for a large look-up store giving all required values of sin θ and cos θ, as is necessary in direct vector rotation, the rotation is effected by so-called CORDIC computation (pseudo-multiplication). If the vector A_{l-1} (. . . 1 . . .) to be rotated is represented as $X + iY$, it can be shown that the operator

$$\prod_{j=0}^{p-1} (1 + ia_j 2^{-j})$$

is equivalent to the operator $Ke^{2\pi i\theta''}$ where K is a readily removed constant of multiplication and

$$2\pi\theta'' = \pm 2\pi\left(\theta - \frac{1}{4}\right) = \sum_{j=0}^{m-1} a_j \tan^{-1} 2^{-j};$$

Thus the required angle of rotation θ (in radians/2π)

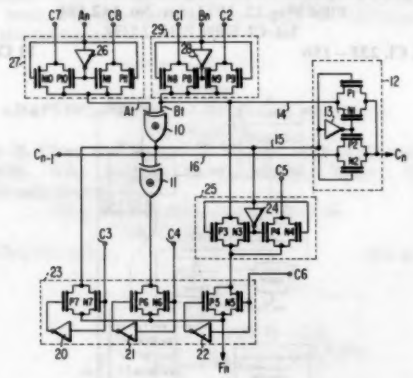
$= b_{m-1}2^{-1} + b_{m-2}2^{-l+1} + \ldots + b_{m-l+1}2^{-2}$ is stored, the vector X + iY, after an initial 90° rotation step, is multiplied by successive terms $1 + iaj\,2^{-j}$, and $a_j \tan^{-1}2^{-j}$ is added to or subtracted from the stored angle, in accordance with whether a_j is +1 or −1 and the value of a_j is changed from the existing to the other value when the stored angle goes through zero. A look-up store for $\tan^{-1}2^{-j}$ is required but only five words have to be stored because, for $j > l$, $\tan^{-1}2^{-j}$ is approximated sufficiently closely by 2^{-j}.

3,767,906

MULTIFUNCTION FULL ADDER

Richard Lee Pryor, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 21, 1972, Ser. No. 219,747
Int. Cl. G06f 1/02, 7/385
U.S. Cl. 235—175 **4 Claims**



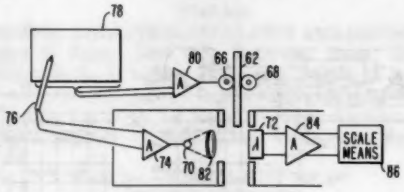
An arithmetic unit which may be utilized in any binary computational circuit. The arithmetic unit utilizes a pair of exclusive OR gates connected in series. One of the exclusive OR gates operates upon input signals (e.g. addend and augend) to produce an output signal. The other exclusive OR gate operates upon input signals (e.g. carry and output from the first OR gate) to produce the sum output signal. A two-way transmission gate switch operates upon certain input signals (e.g. carry, addend or augend, and output signal produced by the first exclusive OR gate) to produce the carry output signal.

3,767,907

CORRELATION MEASUREMENT APPARATUS

Arthur J. Radcliffe, Jr., Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed June 16, 1971, Ser. No. 153,600
Int. Cl. G06g 7/19
U.S. Cl. 235—181 **13 Claims**



An analog correlation measurement apparatus provides a relative correlation figure of merit between an unknown and a known signal. The known signal is photographically stored on a film strip having a plurality of contiguous areas of varying image density. An optical system having a light emitting gallium arsenide diode interrogates the film strip synchronously with the tracing or generation of the unknown signal. As a result of the interrogation, an accumulated voltage value is generated that is equivalent to the mathematical process of summation of a plurality of products. This value is used with a similar value derived from an autocorrelation of the known signal to provide a relative correlation number representing the correlation coefficient.

ERRATA

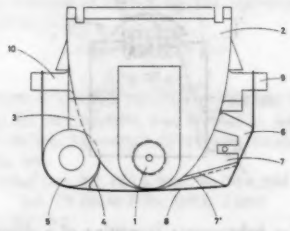
For Classes 240—10 and 240—11 see:
Patents Nos. 3,767,902 and 3,767,904

3,767,908

ELECTRONIC FLASH UNIT WITH FLASH TUBE IGNITION CIRCUIT MOUNTED ON BACK OF REFLECTOR

Karl Ackermann; Siegfried Uecker; Rudolf Socha, and Heinz-Joachim Reiber, all of Berlin, Germany, assignors to Robert Bosch Photokino GmbH, Stuttgart, Germany

Filed Apr. 19, 1972, Ser. No. 245,459
Claims priority, application Germany, Apr. 22, 1971, P 71 15 377.0
Int. Cl. G03b 15/02
U.S. Cl. 240—1.3 **4 Claims**



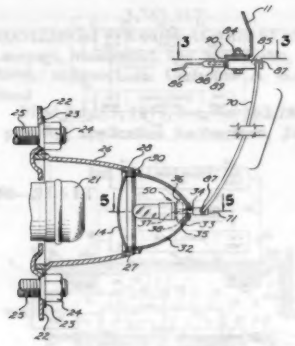
The outside surface of the reflector has a rib with a recess for holding the ignition coil and two projecting tongues for retaining the ignition capacitor. Further, two lugs extend from the outside surface of the reflector for receiving a rubber band which extends from one lug to the other and also encompasses the ignition coil and capacitor, thereby retaining same in a fixed relative to the reflector.

3,767,909

AUTOMOBILE WHEEL LIGHT ACCESSORY

Joseph P. Bell, 5256 Phillips St., Maple Heights, Ohio

Filed June 26, 1972, Ser. No. 266,229
Int. Cl. B60q 1/26
U.S. Cl. 240—8.12 11 Claims



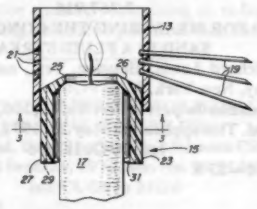
An electric light accessory for permanent attachment to an automobile wheel wherein the light remains stationary in use and is electrified by a ground means and a non-rotating power lead cable operatively interconnected to a power source. The non-rotating electrical light further includes a bearing means junction in the electrical circuit whereby continuous power from the non-rotating power cable feeds the non-rotating light and permits the translucent lens or light enclosure to rotate with the wheel without interrupting the electrical circuit.

3,767,910

DECORATIVE STRUCTURE

Roy Major Harrigan, Stratton Mountain Rd., Winhall, Vt.

Filed Feb. 22, 1972, Ser. No. 227,929
Int. Cl. F21p 1/02
U.S. Cl. 240—10 B 1 Claim



A decorative structure consisting of a plurality of optical fibers mounted within a hollow slide and chimney which rest on the upper edge of a conventional candle. The inner ends of the fibers are disposed adjacent the candle flame so that light is transmitted to the outer tips thereof.

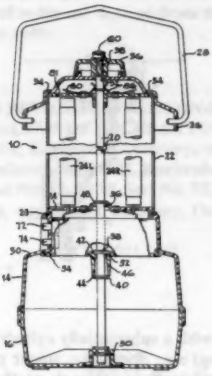
3,767,911

BATTERY POWERED ELECTRIC LANTERN

Daniel C. Oakley, Madison; Ralph T. Jacobsen, Stoughton, and Harley J. Van De Loo, Verona, all of Wis., assignors to ESB Incorporated, Philadelphia, Pa.

Filed Nov. 13, 1972, Ser. No. 306,144
Int. Cl. F21l 7/00
U.S. Cl. 240—10.63 14 Claims

An electric lantern has a case in two portions which may be opened to permit replacement of batteries without disengagement of the other components from the upper portion of the case. Means are provided to retain the lamp and upper portion of the battery case as retained members of a structurally engaged assembly which may be disengaged from the lower portion of the battery case. As a separate feature, a lens may be disengaged from the battery case to permit replacement of the electric lamp without opening the battery case. A rod is used as a member of the engagement means which hold the lantern components together; in addition, the rod may be part of the lantern's electrical circuit. The electrical circuit may be designed so that it is opened when the battery case is opened and/or when the lens is disengaged from the battery case.

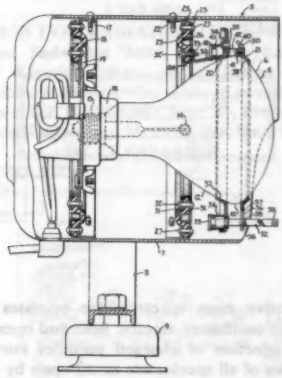


3,767,912

FLOODLIGHT HAVING QUICK RELEASE SUPPORT FOR LAMP ENVELOPE

Kenneth R. Faux, Sr., Meguon, Wis., assignor to Phoenix Products Company, Inc., Milwaukee, Wis.

Filed July 31, 1972, Ser. No. 276,852
Int. Cl. F21v 17/00
U.S. Cl. 240—41.55 6 Claims

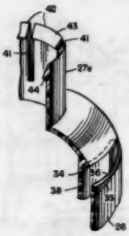


A floodlight fixture has a cup-shaped housing in which a lamp is enclosed with the maximum diameter portion of its glass envelope axially clamped between fixed and movable steadying rings. The movable ring has a hinged connection with the fixed one, to swing to a lamp releasing position, and is quickly releasably latched in its lamp engaging position. The latch and the hinge connection are arranged to bias the movable ring axially toward the fixed one. Hinge connection bias cooperates with fingers on the movable ring to detentwise hold it in its lamp releasing position.

3,767,913
VENTILATED LAMP GUARD

Tony Trevithick, Gurnee, Ill., assignor to Daniel Woodhead Inc., Northbrook, Ill.

Filed Oct. 12, 1972, Ser. No. 296,805
Int. Cl. B02c 17/20
U.S. Cl. 240—102 R 8 Claims

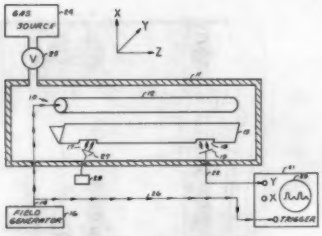


A lamp guard with a substantially cylindrical, hollow body including a flaring, e.g., dome-like, upper portion; a hollow, substantially cylindrical coaxial neck on the domed portion; elongated, horizontal, circumferentially spaced, ventilating slots in the upper portion of the body; and longitudinally arcuate, curtain walls depending from the flaring portion radially inwardly of the respective slots and extending approximately the length of the respective slots and below the lower edges thereof.

3,767,914
CONTINUOUS INJECTION MASS SPECTROMETER

Rolf K. Mueller, Brighton, and John P. Carrico, Royal Oak, both of Mich., assignors to The Bendix Corporation, Southfield Mich.

Filed May 17, 1971, Ser. No. 144,112
Int. Cl. H01j 39/34
U.S. Cl. 250—41.9 DS 19 Claims

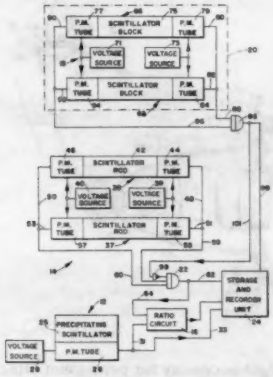


The inventive mass spectrometer operates with an inhomogeneous oscillatory electric field and operates with the continuous injection of charged particles into the electric field. Particles of all species are acted upon by the field, and some of the species ultimately are detected to produce an output which is random with respect to the phase of the oscillatory field. Appropriate parameters of the electric field are varied so that ions of some species bunch up and produce output pulses which are above the random output caused by the detection of the other species which do not bunch. Detection of these pulses and their relationship to the phase of oscillation of the electric field uniquely identifies the bunched species in accordance with the mass-to-charge ratio. Different species can be identified by properly readjusting the electric field parameters to cause bunching of the different species.

3,767,915
RADIATION MONITORING SYSTEM

Lewis Battist, 9121 McDonald Drive, Bethesda, Md.

Filed Oct. 14, 1970, Ser. No. 80,572
Int. Cl. G01t 1/20
U.S. Cl. 250—71.5 R 9 Claims

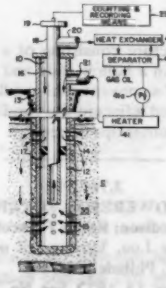


A radiation monitoring system which continuously detects and measures low levels of radiation and radioactive materials in the surrounding atmosphere comprises a large volume multiple scintillation beta radiation detector with an alpha particulate radiation scintillation detector, and with background reduction being achieved by the use of an anti-coincidence cosmic ray and high energy photon shield. The use of coincidence and anti-coincidence pulse techniques and passive logic circuitry reduce background and electronic noise. The beta radiation and alpha radiation detectors have their output connected to a ratio circuit to continuously generate an output signal indicative of the ratio of alpha radiation to beta radiation. The cosmic ray detector generates an inhibiting signal to block the output of the beta detector to prevent it from recording its response to naturally occurring cosmic radiation.

3,767,916
METHOD FOR MEASURING THE CONCENTRATION OF SAND IN A FLUID STREAM

Donald Richard Lewis, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 13,260, Feb. 20, 1970, abandoned. This application May 20, 1971, Ser. No. 145,490
Int. Cl. G01t 1/16
U.S. Cl. 250—83 R 5 Claims



The grain concentration of a stream of grain-containing fluid is measured by positioning an abradable radioactive material in the stream, measuring the stream velocity and the

rate of abrasion-induced reduction in radiation emission, and determining the grain concentration from that of a stream of known composition that causes the measured rate of radiation emission reduction while contacting an equivalent material at the measured velocity.

3,767,917

IONIZING-TYPE FIRE ALARM SENSOR

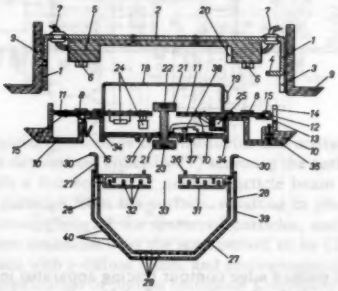
Thomas Lampart, Mannedorf, and Max Kuhn, Stafa, both of Switzerland, assignors to Cerberus A G., Mannedorf, Switzerland

Filed July 15, 1971, Ser. No. 162,781

Claims priority, application Switzerland, July 23, 1970, 11203/70

Int. Cl. G01n 23/12

U.S. Cl. 250—83.6 FT 13 Claims



A housing structure, made of metal, includes at least three interlocking parts, having interengaging elements which operate in different directions, in space, for example elements 1 and 2 being connectable by rotation in one direction, elements 2 and 3 being connectable by vertical movement and, if desired, rotation in another direction to permit ready disassembly of selected elements for cleaning and maintenance without, however, accidental dislodgment of the elements of the structure in case of fire or exposure to high temperature. The first part forms a socket; the second part includes an electric circuit and one portion of an ionization chamber with a radioactive substance; and the third part forms the other portion of the ionization chamber, containing no radioactive substances and shielding the second part from dust and dirt.

3,767,918

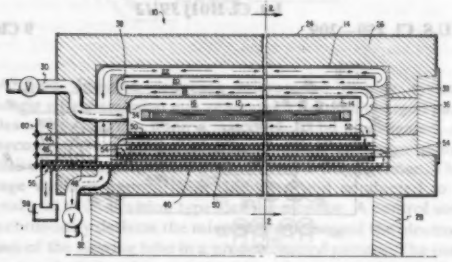
MULTIPLE PASS FLUID IRRADIATOR WITH SEDIMENT REMOVAL CAPABILITY

Cicero R. Graybeal, Box 292, Oak Cir., Johnson City, Tenn.

Filed Sept. 21, 1970, Ser. No. 74,014

Int. Cl. G01n 21/26

U.S. Cl. 250—433 10 Claims



The disclosure is directed to an irradiator for fluent materials wherein the same traverse a single flow path through the irradiator which flow path is repeatedly reversed. The reversing flow path is defined, in part, by a plurality of passages which are concentric with a source of radiation. Curved end walls are provided at opposite ends of each passage to repeatedly direct the flow path along different ones of the concentric passages past the source of radiation at varying radial distances therefrom and in substantially surrounding relation thereto. Conveyor means in the form of screw conveyors are embedded in each passage wall for the intermittent or continuous removal of sediment derived from the fluent material traversing the flow path.

3,767,919

METHOD AND DEVICE FOR THE NON-DESTRUCTIVE ANALYSIS OF NUCLEAR FUELS

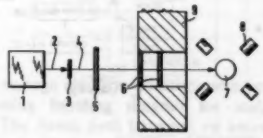
Walfried Michaelis, Karlsruhe, Germany, assignor to Gesellschaft fur Kernforschung MBH, Karlsruhe, Germany

Filed Nov. 2, 1970, Ser. No. 85,983

Claims priority, application Germany, Oct. 31, 1969, P 19 54 825.5

Int. Cl. G01t 3/00

U.S. Cl. 250—83.1 2 Claims



A method and a device for the non-destructive analysis of nuclear fuels. The method provides that a neutron beam of a predetermined energy distribution is directed as the primary radiation at the nuclear fuel. The primary radiation penetrates the fuel completely and in this process, as a result of nuclear reactions, generates a secondary radiation in it. The secondary radiation emanates from all volume elements of the nuclear fuel element and reaches at least a space immediately surrounding it. The secondary radiation is there measured. The device contains a neutron source and a moderator disk providing a "1/E" neutron slowing down spectrum.

3,767,920

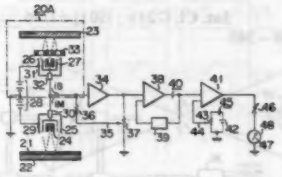
REFLECTION TYPE RADIATION THICKNESS METER

Hiroshi Kido; Sadakatsu Saito, both of Kawasaki, and Toshiharu Kimoto, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co. Ltd., Kawasaki-shi, Japan

Continuation of Ser. No. 860,987, Sept. 25, 1969, abandoned. This application Aug. 16, 1971, Ser. No. 172,277

Int. Cl. G01n 23/00

U.S. Cl. 250—83.3 D 9 Claims



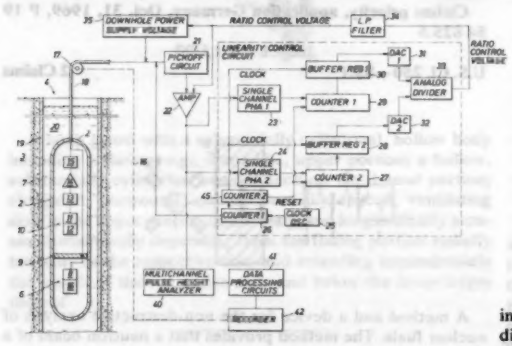
A thickness measuring apparatus includes a radiation detector to provide an ionization current corresponding to radiation reflected by a substance whose thickness is to be measured and placed on a substrate sufficiently thick to saturate radiation reflected therefrom, and a reference unit to provide an electric quantity of opposite polarity and equivalent to the ionization current generated by a sample of the same material as the substance sufficiently thick to saturate radiation reflected therefrom. A zero thickness point of the substance mounted on the substrate upon actual determination is so pre-

adjusted, before actual determination, as to define the output level from the radiation detector which faces a sample of the same material as the substance sufficiently thick to saturate radiation reflected therefrom. The difference between the ionization current from the radiation detector which faces the substance placed on the substrate and whose thickness is to be measured substituting for the sample following the pre-adjustment and the electric quantity from the reference unit is applied to an indicating meter through a logarithmic amplifier.

3,767,921
WELL LOGGING SYSTEM WITH LINEARITY CONTROL

John M. Jones, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Mar. 31, 1972, Ser. No. 239,888
Int. Cl. G01v 5/00
U.S. Cl. 250—83.3 R 9 Claims

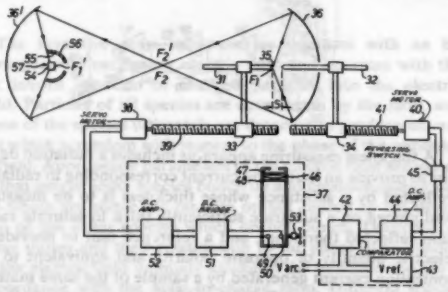


An illustrative embodiment of the present invention includes method and apparatus for gamma ray spectroscopy well logging systems including a closed loop linearity control feature. A borehole tool provides gamma ray pulse data. The gamma ray counts in at least two portions of the gamma ray energy spectrum chosen so that their ratio remains relatively constant under usual borehole conditions are monitored. An error signal is developed if the ratio of gamma ray counts in the monitored portions of the energy spectrum deviate significantly from the constant ratio. The error signal is used to control the power supply voltage for the borehole tool and/or the surface amplification of the gamma ray pulse signals to preserve system linearity.

3,767,922
ELECTRIC ARCS

Peter G. Towlson, 40 Old Gate Rd., Davington Ct., Faversham, England

Filed Apr. 27, 1972, Ser. No. 248,292
Claims priority, application Great Britain, May 3, 1971, 12,638/71
Int. Cl. G21h ; H01j 61/96
U.S. Cl. 250—340 12 Claims

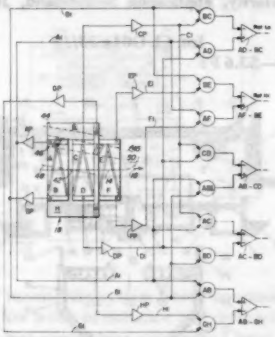


A source of electromagnetic radiation comprises two electrodes, means for connecting a voltage across the electrodes sufficient to maintain an arc discharge between them, and means responsive to a property of the discharge across the electrodes to adjust the separation of the electrodes to a value below that at which a mathematic minimum occurs in the voltage/separation curve.

3,767,923
PATTERN CONTOUR TRACING APPARATUS

Francis G. Bardwell, Elmhurst, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Mar. 29, 1972, Ser. No. 239,045
Int. Cl. G05d 1/00
U.S. Cl. 250—202 R 8 Claims

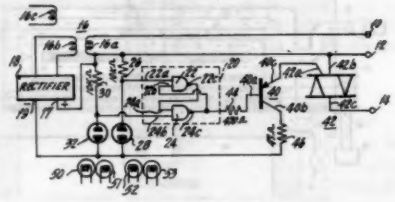


Line or pattern edge contour tracing apparatus incorporating a triangularly shaped pair of photocells receiving either direct or pulsating light from the line or edge to be traced. The triangularly shaped photocell pair carried by a sensing head are arranged in overlapping positions across the line or edge to be traced and across the direction of sensing head movement to enable the entire area of each cell to be used in sensing line displacement or orientation. Providing successive pairs of triangularly shaped photocells arranged across the line or direction of travel and in circuits for combining their outputs provides resultant signals indicative of the deviation of the sensing head from the line or edge being traced with the output of the cells selected and combined dependent on whether an edge or line is traced and the tracing speed for controlling servo motors to drive the sensing head along the line or edge. In addition the output of selected cells are controlled to ensure the sensing head properly orients to the line when tracing at slow speed.

3,767,924
CONTROLLABLE ELECTRICAL SWITCH

Donald Charles, Yardley, Pa.; Albert Charles Hartsough, Willingboro, and Robert Fenches Sanford, Princeton Junction, both of N.J., assignors to Princeton Electro Dynamics, Inc., Princeton Junction, N.J.

Filed Mar. 24, 1972, Ser. No. 237,646
Int. Cl. H01j 39/12
U.S. Cl. 250—209 9 Claims



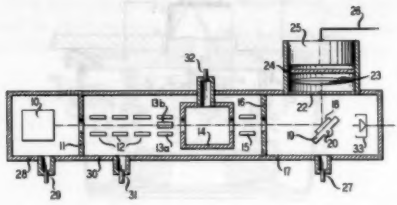
An electrical switch which preferably can be remotely conditioned to an "ON" or "OFF" state by the use of light energy radiations, but which can also be controlled at the switch location, if desired.

3,767,925

APPARATUS AND METHOD FOR DETERMINING THE SPATIAL DISTRIBUTION OF CONSTITUENTS AND CONTAMINANTS OF SOLIDS

Eugene Burdett Foley, Jr., Morris Plains; Alfred Urquhart MacRae, Berkeley Hts.; Douglas Leon Simms, Orange; Norman Henry Tolk, Mendham, and Clark Woody White, Dover, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 8, 1972, Ser. No. 232,872
Int. Cl. H01j 37/26
U.S. Cl. 250—251 9 Claims



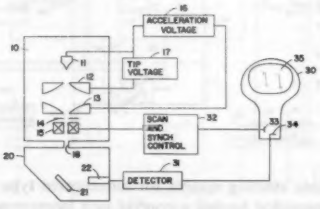
The spatial distribution of constituents and contaminants in a solid is determined either by (1) scanning the surface of the solid with a focused ion or neutral particle beam to sputter excited particles from the surface, resulting in photon emissions characteristic of the sputtered particles, and detecting the photon emissions over the scan period, or by (2) flooding the surface with a diffuse beam, and photographically recording the distribution of photon emissions. Continued sputtering results in removal of surface material and detection of the photon count rate or a sequence of photographs taken during each successive scan period indicates the distribution of constituents and contaminants in the bulk of the solid as a function of distance from the surface.

3,767,926

FIELD EMISSION SCANNING MICROSCOPE DISPLAY

Vincent J. Coates, Los Altos, and Leonard M. Welter, Saratoga, both of Calif., assignors to American Optical Corporation, Southbridge, Mass.

Filed May 8, 1972, Ser. No. 251,125
Int. Cl. H01j 37/26
U.S. Cl. 250—310 7 Claims



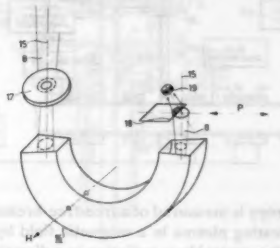
A field emission scanning microscope display system wherein a field emission gun generates a beam of charged particles which impinge upon a specimen to be investigated. A detector of the scintillation type produces an image signal relative to the impingement of the beam on the specimen. The image signal is appropriately amplified and conducted to a signal grid of a television type viewing monitor. A control unit synchronously deflects the microscope beam and the electron beam of the viewing tube in a predetermined pattern. The pattern is selected to have preferably a four-to-one interlacing and the interlacing sequence is selected so as to render the image formed on the viewing tube substantially stationary in a normal viewing mode.

3,767,927

ELECTRON BEAM APPARATUS WITH BEAM-STABILIZATION SYSTEM

Pieter Jan Rus; Jan Bart Le Poole, and Johannes Kramer, all of Delft, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 25, 1971, Ser. No. 174,657
Claims priority, application Netherlands, Aug. 28, 1970, 7012758
Int. Cl. H01j 37/26
U.S. Cl. 250—311 21 Claims



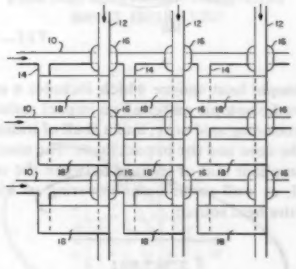
A high-voltage electron microscope is provided with a double focussing bending magnet for stabilizing the beam velocity. The beam path between an entrance diaphragm in front of the magnet and an image produced by the bending magnet of this diaphragm on the exit side of the magnet are used as a reference for the signal to be detected on the output side of the bending magnet. Near this image, a detector device is provided which intercepts a fraction of from 1 to 10 percent of the beam from which it derives a control signal for the high voltage.

3,767,928

TWO-DIMENSIONAL IMAGING ARRAY OF CHALCOGENIDE GLASS BOLOMETERS

Stephen G. Bishop, Arlington, Va., and William J. Moore, Hyattsville, Md., assignors to the United States of America as represented by the Secretary of the Navy

Filed June 8, 1972, Ser. No. 260,864
Int. Cl. G01t 1/16
U.S. Cl. 250—338 10 Claims



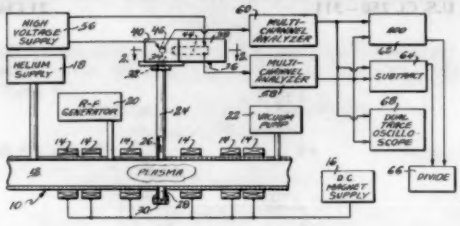
A far-IR imaging array comprising a two-dimensional array of chalcogenide glass thermistor bolometers. A two-dimensional system of metallic strips arranged in a grid structure has insulating film between the strips at the points of intersection of each horizontal and vertical strip. A bolometer is placed at each intersection so as to bridge the insulator thereat. If an infrared image is focused on the array, the resistance of each bolometer can be determined by a scanning system.

3,767,929

METHOD AND MEANS FOR MEASURING THE ANISOTROPY OF A PLASMA IN A MAGNETIC FIELD

Juda L. Sohet, Madison, Wis., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed June 15, 1972, Ser. No. 263,037
Int. Cl. G01j 39/18; G01t 1/20
U.S. Cl. 250—366 10 Claims



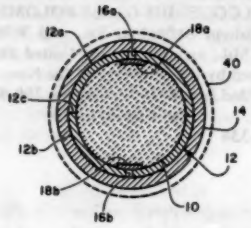
Anisotropy is measured of a free-free-bremsstrahlung-radiation-generating plasma in a magnetic field by collimating the free-free bremsstrahlung radiation in a direction normal to the magnetic field and scattering the collimated free-free bremsstrahlung radiation to resolve the radiation into its vector components in a plane parallel to the electric field of the bremsstrahlung radiation. The scattered vector components are counted at particular energy levels in a direction parallel to the magnetic field and also normal to the magnetic field of the plasma to provide a measure of anisotropy of the plasma.

3,767,930

RADIOISOTOPIC HEAT SOURCE

Emerson H. Sayell, Phoenixville, Pa., assignor to the United States of America as represented by the United States

Filed June 21, 1972, Ser. No. 265,057
Int. Cl. G21h 1/00
U.S. Cl. 250—493 5 Claims



A radioisotopic heat source which includes a core of heat productive, radioisotopic material, an impact resistant layer of graphite surrounding said core, and a shell of iridium metal intermediate the core and the impact layer. The source may also include a compliant mat of iridium between the core and the iridium shell, as well as an outer covering of iridium metal about the entire heat source.

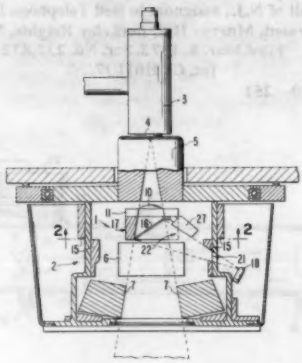
3,767,931

ADJUSTABLE X-RAY BEAM COLLIMATOR WITH SHUTTER FOR ILLUMINATION OF THE RADIATION PATTERN

Norman H. Williams, San Francisco, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Nov. 14, 1972, Ser. No. 306,497
Int. Cl. G21f 5/04; H01j 35/16
U.S. Cl. 250—511 15 Claims

A shutter is provided to admit visible light into the region defined by the adjustable beam-defining components of the collimator of an X-ray apparatus. The light so admitted is reflected so as to emanate from a virtual source located at the origin of the X-ray beam. The shutter is mechanically biased to remain closed, and can be opened to admit light only when no X-ray beam is being produced. Thus,



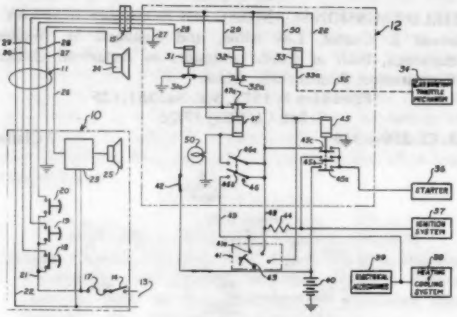
the radiation pattern formed by the adjustable collimator can be simulated by visible light without the light source being located in the path of the X-ray beam. Furthermore, simulation of the radiation pattern is obtained without the shutter being open when X-ray radiation is being produced, so that radiation leakage through an open shutter is precluded.

3,767,932

REMOTE VEHICLE STARTING SYSTEM

Charles A. Bailey, 1926 Genessee Ave., Columbus, Ohio

Filed Sept. 1, 1972, Ser. No. 285,632
Int. Cl. F02n 11/00
U.S. Cl. 290—38 4 Claims



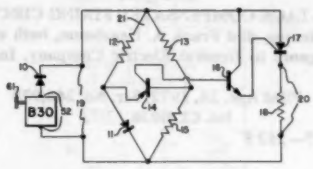
A remote starting system for automotive type vehicle engines is provided having a control unit interconnected by an electrical cable with a relay actuated vehicle operating circuit and apparatus in a vehicle. The operating circuit includes a starting circuit, an engine run circuit and a holding relay circuit for maintaining the vehicle engine in operation when the engine is once started. The control unit includes a manual switch for selective energization of an electrical solenoid in the vehicle operating circuit, for actuating the carburetor throttle prior to initiating starting of the engine. Once started, the vehicle engine continues to run through the engine run circuit and the holding relay circuit irrespective of disconnection of the control unit from the vehicle operating circuit as by disconnection of the control unit from the vehicle operating circuit as by disconnecting the electrical cable from the vehicle. An engine operation monitoring system is also provided at the remotely located control unit.

3,767,933

POWER SUPPLY HAVING A PLURALITY OF POWER SOURCES THAT ARE SEQUENTIALLY PLACED ON LOAD ONE AT A TIME

John C. Bogue, 101 Ocean Ave., and Robert I. Sarbacher, 1045 Ocean Ave., Suite 1, both of Santa Monica, Calif., assignor to Bogue by said Sarbacher

Filed May 30, 1972, Ser. No. 257,535
Int. Cl. H02j 3/32
U.S. Cl. 307—48 22 Claims



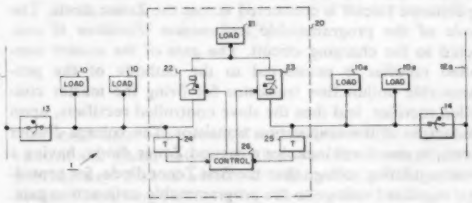
An electrical power, supply, particularly adapted for intermittent use, that has an extremely long standby life is disclosed. The power supply includes a series of batteries that are selectively placed in the load circuit. A new battery is placed in the load circuit when the battery previously supplying power to the load is substantially exhausted. Three different circuits are disclosed for sequentially placing the batteries in the load circuit. All three circuits are particularly adapted for use with electrochemical batteries that are activated by a squib or the like. Thus, the circuits not only place a new battery in the load circuit when the preceding battery has substantially spent its useful life but also provides for the activation of the new battery as it is placed in the load circuit. In addition, one of the circuits can be used with conventional activated batteries as well as the reserve type batteries that have to be activated.

3,767,934

FAULT RESPONSIVE SWITCHING SYSTEM

Robert E. Butcher, Greenville, Tex., assignor to Esso Manufacturing Company, Greenville, Tex.

Filed June 16, 1971, Ser. No. 153,746
Int. Cl. H02j 7/00
U.S. Cl. 307—64 6 Claims



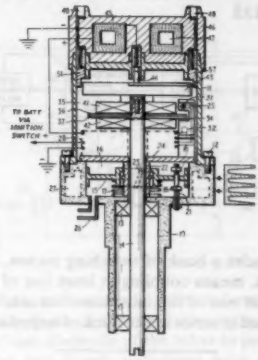
Disclosed is a fault responsive switching system adapted to transfer a load from a preferred source to an emergency source upon the occurrence of a source fault or loss of voltage, retransfer the load from the emergency source to the preferred source after correction of the fault, and to isolate the load upon the occurrence of a load fault. The switching is effected by a control network responsive to loss of voltage from the respective sources, and includes relay circuitry effective to actuate solenoids coupled to a pair of switches coupling the load to the respective sources.

3,767,935

IGNITION DISTRIBUTOR

Alan Neville Trass, 44 Moyran Parade, Grays Pt., Wales

Filed Jan. 24, 1972, Ser. No. 220,067
Int. Cl. H03k 3/00
U.S. Cl. 307—106 8 Claims



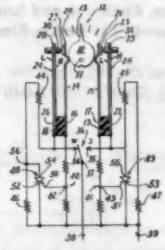
An ignition distributor which is particularly suitable for use in high speed engines and rotary engines of the "Wankel" type in which a disc having peripheral discontinuities is rotated on a shaft so that the discontinuities pass between a light source and a photo device so that the light from the light source to the photo device is interrupted intermittently in a predetermined manner, centrifugal advance and retard means being associated with the disc to advance or retard the production of a spark in a sparking plug, the light source and photo device being mounted so as to be movable around the shaft by vacuum advance and retard means, the shaft carrying a distributor arm around which are mounted contacts for connection to the number of spark plugs. In preferred forms of the invention a dwell compensating mechanism is also associated with the disc and a transistorised amplifier trigger unit is mounted within the distributor. In the latter case water or air cooling is provided to restrict the temperature of parts of the distributor. An ignition coil may be provided in the cap of the distributor.

3,767,936

ANTICIPATING THERMOSTATIC TRANSMITTER

Russell P. Sweger, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed May 8, 1972, Ser. No. 251,151
Int. Cl. H01h 35/00
U.S. Cl. 307—117 10 Claims

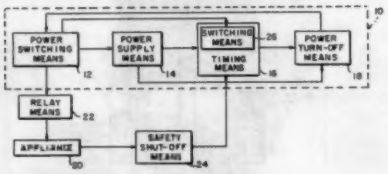


A controllable switching device closes and opens a series circuit comprising a power supply and a receiver. The switching device is controlled by an on-off thermostat responsive to both the ambient temperature and an anticipating heater, the energization and deenergization of which is controlled by the switching device. The result of use of such an anticipating thermostatic transmitter is the production of an on-off time proportioned current in the series circuit.

3,767,937
TIMER FOR AN APPLIANCE

Philip L. Schmidgall, Indianapolis, Ind., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Aug. 11, 1971, Ser. No. 170,816
Int. Cl. H01h *7/00*
U.S. Cl. 307—133 **12 Claims**

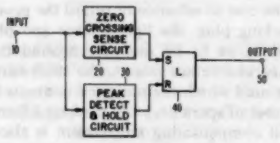


A timer includes a bank of switching means, a bank of impedance means, means coupling at least one of the switching means to at least one of the impedance means, and capacitor means connected in series to the bank of impedance means.

3,767,938
ZERO SENSE AFTER PEAK DETECTION CIRCUIT

Terrance Wayne Kueper, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 26, 1972, Ser. No. 257,080
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 R **9 Claims**

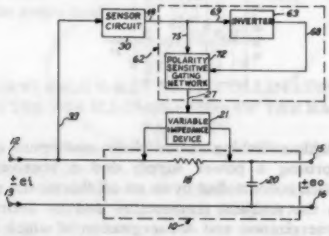


A zero sense after peak detection circuit for rejecting noise signals includes a peak detect and hold circuit which resets a latch only if the input signal has exceeded a predetermined negative threshold voltage which is a fixed percentage of a valid signal. After the input signal exceeds the predetermined negative threshold voltage and the latch is reset, the latch is then set when a zero sense circuit senses the input signal crossing zero.

3,767,939
DYNAMIC FILTER

Morteza M. Chamran, Elmhurst, and Sang S. Pak, Villa Park, both of Ill., assignors to The Perkin-Elmer Corporation, Oak Brook, Ill.

Filed Dec. 29, 1971, Ser. No. 213,256
Int. Cl. H03k *17/60*; **H04b** *15/00*
U.S. Cl. 307—251 **10 Claims**

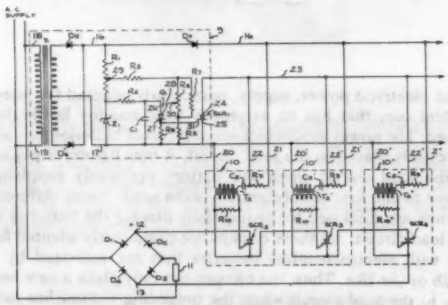


The disclosure describes a system for automatically controlling the time constant of an electronic filter to significantly alter the transition time from one signal response level to another. The system employs a variable impedance means, such as a field effect transistor, which can alter the effective time constant of the filter. Sensor means sample the imput signal to the filter and produce a control signal in response to an amount and rate of change in the input signal greater than a predetermined value. Control means, such as a polarity changing inverter and a diode gating network, energize the field effect transistor in response to either polarity of the control signal, so that the time constant of the filter is changed.

3,767,940
VOLTAGE COMPENSATED FIRING CIRCUIT

Rollie R. Herzog, and Frank A. Neusbaum, both of Danville, Ill., assignors to General Electric Company, Indianapolis, Ind.

Filed Apr. 24, 1972, Ser. No. 246,974
Int. Cl. H03k *17/72*
U.S. Cl. 307—252 F **14 Claims**



A firing circuit for firing a number of controlled rectifiers in which there are a number of slave controlled rectifiers, each of which is associated with a storage capacitor for firing the slave controlled rectifier upon discharge of the storage capacitors. A master controlled rectifier is connected in circuit with the storage capacitors for discharging the storage capacitors to fire the slave controlled rectifiers upon firing of the master controlled rectifier. There is a timing circuit including a programmable unijunction transistor which conducts when its anode voltage exceeds its gate voltage by more than its junction voltage drop. The gate of the programmable unijunction transistor has a selectively variable connection to a voltage divider circuit, which, in turn, is connected in circuit across the pulsating potential source. A first Zener diode is connected in circuit across the pulsating potential source and a resistance-capacitance circuit is connected across the Zener diode. The anode of the programmable unijunction transistor is connected to the charging circuit. The gate of the master controlled rectifier is connected to the cathode of the programmable unijunction transistor for firing the master controlled rectifier, and thus the slave controlled rectifiers, upon conduction of the unijunction transistor. The voltage divider circuit, in one form includes a second Zener diode, having a lower regulating voltage than the first Zener diode, for providing a regulated voltage to the programmable unijunction gate. In another version, the voltage divider circuit is connected to the first Zener diode through a dropping resistance for providing the gate of the programmable unijunction transistor with a regulated voltage.

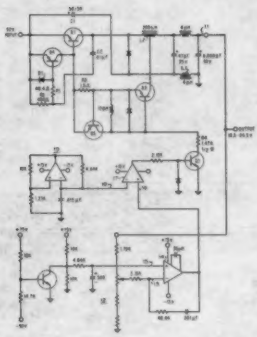
3,767,941
TURN-OFF CIRCUIT FOR SWITCHING TRANSISTOR

Richard D. Crawford, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 17, 1972, Ser. No. 244,370
Int. Cl. H03k *5/12, 3/26*
U.S. Cl. 307—263 **5 Claims**

A switching transistor circuit for use, for example, in a switching mode regulator where the emitter-collector circuit

of the transistor is coupled in a series circuit between the DC input line and the output to the load circuit, the output DC voltage level being a function of the duty cycle of the transistor, the turn-on and turn-off of the transistor being controlled by a control circuit coupled to the base of the transistor, a circuit being coupled to the base which, when



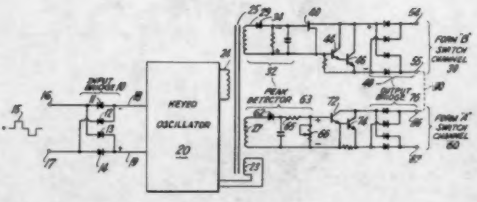
operated, serves to sweep the charge from the transistor base region, and a differentiating circuit coupled across the transistor and operating at the time the voltage across the transistor starts to change when the transistor starts to turn-off to thereby enable said circuit to sweep the charge from the base region and hasten the fall time of the transistor.

3,767,942

SOLID STATE RELAY

Norman Larry Schwartz, Stony Brook, N.Y., assignor to Multiplex Communications Inc., Hauppauge, N.Y.

Filed Mar. 10, 1971, Ser. No. 122,701
Int. Cl. H03k *17/00*
U.S. Cl. 307—257 8 Claims



A solid state relay structure includes electrically isolated control and plural output switch ports. The arrangement can provide any desired switch configuration, wherein the individual switching elements may be adjusted to operate in any preferred sequence. The relay employs a keyed oscillator, acting through detector circuitry inductively coupled thereto, to selectively pinch off conduction in a depletion mode field effect transistor which normally maintains an output switching transistor conductive (a "normally closed" relay output). Correspondingly, an independently detected oscillation-responsive output signal initiates conduction in an additional transistor switch included in a normally nonconductive ("normally open") switching channel.

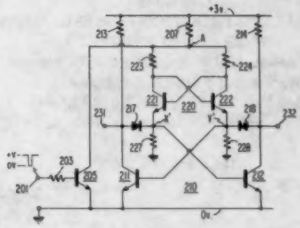
In accordance with one aspect of the invention, diode bridge arrays selectively render the input and output ports insensitive to the polarity of the relay energization or the output load current.

3,767,943

DIRECT-COUPLED TRIGGERED FLIP-FLOP

Steven Alan Steckler, Clark, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 3, 1972, Ser. No. 303,414
Int. Cl. H03k *3/286*
U.S. Cl. 307—292 1 Claim



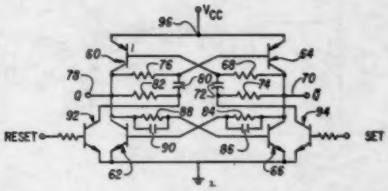
Each of first and second grounded-emitter amplifier transistors has a diode connected between its collector electrode and the base electrode of the other to provide a storage flip-flop. Third and fourth transistors have collector electrodes, each coupled to a source of triggering pulses by similar resistors; cross-coupled collector and base electrodes; and emitter electrodes, each connected to a separate one of the base electrodes of the first and second transistors and each connected to ground reference potential by a resistor. So connected, the third and fourth transistors provide a commutating flip-flop, functioning as a steering network for trigger pulses and providing for short term memory of the previous state of the storage flip during its transition in response to a triggering impulse. The use of diodes to cross-couple the collector and base electrodes of the first and second transistors in the storage flip-flop permits fast transitions of the storage flip-flop despite the use of pinch resistor collector loads for the first, second, third and fourth transistors and restricted amplitude triggering pulses, which are employed to reduce power consumption of the direct-coupled triggered flip-flop.

3,767,944

TRIGGERED BISTABLE MULTIVIBRATOR CIRCUITS UTILIZING COMPLENENTARY TRANSISTOR PAIRS

Robert A. Stehlin, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 787,793, Dec. 30, 1968, abandoned.
This application July 26, 1971, Ser. No. 166,288
Int. Cl. H03k *3/26, 3/12*
U.S. Cl. 307—288 5 Claims



The disclosure is directed to electronic multivibrator circuits utilizing two pairs of series connected complementary transistors, with the bases of each of the transistors being cross-coupled to the juncture point of the transistors of the opposite pair. A monostable multivibrator is provided which has the base of one of the transistors coupled through a resistance to ground potential, and includes a normally non-conductive transistor connected to receive a triggering signal for initiating a monostable timing period. A bistable multivibrator is provided which includes triggering transistors connected across

symmetrical portions of the circuitry for receiving set and reset triggering signals to control the bistable operation of the circuit. A free-running multivibrator is provided which includes resistive current paths from two of the transistor bases to ground potential for generation of a periodic pulse train output upon the application of electrical power.

3,767,945

CIRCUIT AND CONSTRUCTION OF SEMICONDUCTOR STORAGE ELEMENTS

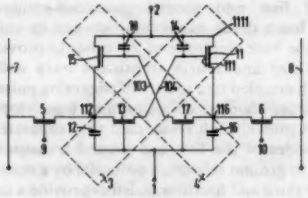
Karl Goser, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 2, 1972, Ser. No. 223,084

Claims priority, application Germany, Feb. 5, 1971, P 21 05 479.5

Int. Cl. H03k *3/286*

U.S. Cl. 307—279 5 Claims



A flip flop circuit and structure with integrated semiconductor storage element for dynamic technique with two field-effect transistors of the flip flop.

3,767,946

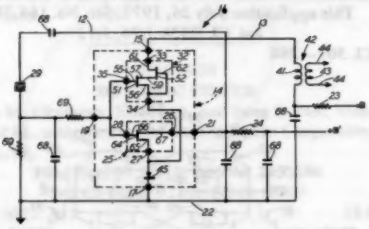
JUNCTION FIELD EFFECT TRANSISTOR DEVICE FOR REPLACING A PENTODE

Robert L. Berger, Raytown, and Alwin J. Holt, Jr., Lee Summit, both of Mo., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed July 17, 1972, Ser. No. 272,242

Int. Cl. H03k *3/26*

U.S. Cl. 307—304 7 Claims



A field-effect transistor device for replacing a pentode includes four terminals which correspond to a cathode terminal, a control grid terminal, a screen grid terminal and a plate terminal of the pentode. When placed into an oscillator circuit to replace the pentode, voltage signals appearing at the terminal corresponding to the control grid terminal of the pentode are utilized by a first transistor circuit to provide feedback signals at the terminal which corresponds to the screen grid terminal of the pentode. The same voltage signals are amplified by a second transistor circuit to supply output signals at the terminal corresponding to the plate terminal of the pentode.

3,767,947

MINIATURIZED ELECTRIC SOURCE

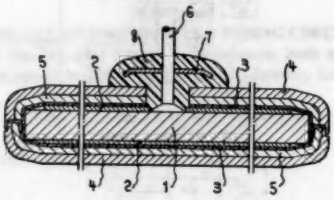
Karl Adler, Grenchen, and Georges Ducommun, Feldbrunnen, both of Switzerland, assignors to Biviator S. A., Grenchen, Switzerland

Filed May 5, 1970, Ser. No. 34,734

Claims priority, application Switzerland, May 7, 1969, 7000/69

Int. Cl. G01d *7/00*

U.S. Cl. 310—30 9 Claims



A miniaturized electric source having a radioactive source of β -radiation and a collector for said radiation, said source and said collector forming the terminals of the electric source, said source comprising a metal disc having coated thereon a tritium compound in solid state and a layer of a solid - state dielectric being disposed between said source and collector.

3,767,948

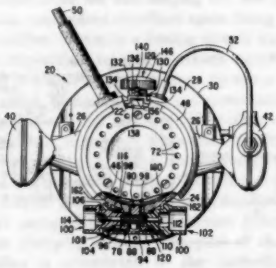
CONCENTRIC ASSEMBLY FOR PORTABLE ELECTRIC ROUTER

William A. Batson, Pickens, S.C., assignor to The Singer Company, New York, N.Y.

Filed Nov. 13, 1972, Ser. No. 306,089

Int. Cl. B27c *5/10*; B23b *5/22*

U.S. Cl. 310—50 5 Claims



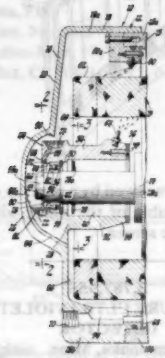
A concentric assembly for a portable electric router having a base formed with a cylindrical sleeve terminating in a bottom flange for work engaging. A cylindrical motor housing is axially adjustably disposed within the sleeve. A motor is mounted within the motor housing and has an armature shaft centrally journaled therein. An arcuate pad is formed internally on one side of the sleeve with the arc of its surface set off from a radius substantially equal to the radius measured from the axis of the armature shaft to the outer periphery of the motor housing. A clamping means is connected through the sleeve on the side opposite the pad to force the motor housing against the pad to lock the same in adjusted axial position and to place the motor housing in concentric position. When the clamp is loosened, a rack and pinion mechanism connected between the motor housing and the sleeve can be used to axially position the motor housing to adjust the depth of cut of the router.

3,767,949

BEARING LUBRICATING SYSTEM

William J. Newill, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 28, 1972, Ser. No. 267,179
Int. Cl. H02k 5/16
U.S. Cl. 310—90 2 Claims



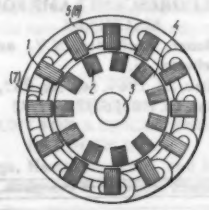
In a preferred embodiment, this disclosure relates to a lubricating system for a bearing supporting the armature of a dynamoelectric machine. The lubricating system comprises a reservoir of lubricant which is adapted to be continuously replenished and a lubricant slinger or thrower which is supported adjacent one side of the bearing and upon the armature for rotation therewith. The reservoir has a portion of the bearing immersed therein when the machine is inactive to provide for the bearing to be lubricated when the machine is activated. The lubricant thrower is adapted to pass through the reservoir while the machine is continuously operating and centrifugally spray the lubricant to provide a mist of lubricant. The system further comprises a fan blade supported immediately adjacent the other side of the bearing and upon the armature shaft for rotation therewith. The fan blade serves to draw the mist of the lubricant through and about the bearing to provide lubrication of the bearing during continuous operation of the machine.

3,767,950

INDUCTOR MACHINE

Arkady Semenovich Ainvarg, Ulitsa Turgenevskaya 62, kv. 6, Kiev, U.S.S.R.

Filed Mar. 10, 1972, Ser. No. 233,626
Claims priority, application U.S.S.R., Mar. 29, 1971, 1635160
Int. Cl. H02k 19/29
U.S. Cl. 310—168 6 Claims



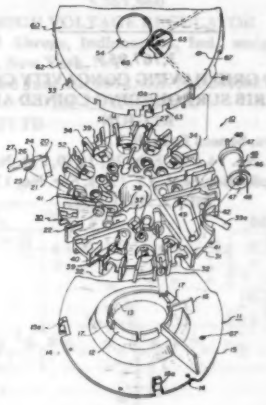
An electromechanical converter having electrical reduction, and made in the form of an inductor machine operating on the basis of utilization of tooth harmonics of the magnetic field. The inductor machine consists of a stator having at least one armature winding and a field winding, and a rotor, said stator having N zones, in each of which a relative arrangement of the stator and rotor teeth is identical; the invention is characterized in that said field winding consists of a multicoil winding with p pole pairs, while at least one armature winding is provided with a number of pole pairs equal to (N+p), (N−P). The use of the distributed field winding having the above-mentioned ratio between numbers of teeth permits to obtain substantially sinusoidal output voltage waveform in the generator mode and high uniformity of the rotational speed in the motor mode.

3,767,951

ELECTRON TUBE SOCKET

Christ J. Dumas, Forest View, and Stephen S. Simovits, Jr., Woodridge, both of Ill., assignors to American Plastikraft Company, Chicago, Ill.

Filed Apr. 18, 1972, Ser. No. 245,119
Int. Cl. H01j 5/50
U.S. Cl. 313—51 17 Claims



An electron tube socket having a plurality of terminal pin contacts coupled to electrically conductive connectors which define a predetermined spacial distance or spark gap between the connector and a conductor ring for dissipating surges of high voltage electrical energy. The tube socket has discrete gaps formed between the connectors and conductor ring such that arcing is initiated across contiguous edges of the spark gap and the surfaces adjacent the contiguous edges are positioned such that after initiation of arcing, the arcing energy is dissipated along these surfaces. A controlled atmosphere spark gap is positioned within the socket to provide fast response time and accurate breakdown voltage for protection against over-voltage transients.

3,767,952

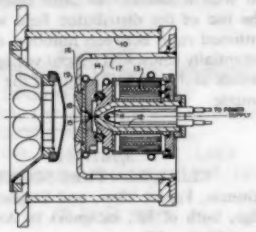
ION SOURCE WITH REDUCED EMITTANCE

John H. Ormrod, Deep River, Ontario, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada

Filed Oct. 24, 1972, Ser. No. 299,763
Int. Cl. H05h 7/00
U.S. Cl. 313—63 4 Claims

An ion source modified by an additional electrode, designated as a scraper electrode, positioned between the anode and extractor electrode, having an aperture slightly less than the source plasma aperture, and adapted to carry a predetermined voltage in reference to the anode. It has been found that the scraper electrode intercepts and removes ions at the periphery of the beam cross-sectional area and this is the region that contains ions that contribute most greatly to

the increased emittance. The central, non-intercepted cross-sectional area therefore has a much reduced emittance. The



voltage on the scraper electrode should be such as to not disturb or distract the electric field between anode and extractor electrode.

3,767,953

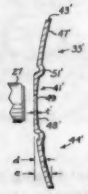
CUP-SHAPED GRID HAVING CONCAVITY CONTAINING ANNULAR RIB SURROUNDING COINED APERTURE REGION

Chris F. Bossers, Seneca Falls, N.Y.

Division of Ser. No. 14,504, Feb. 26, 1970, Pat. No. 3,628,077. This application Sept. 13, 1971, Ser. No. 179,784

Int. Cl. H01j *29/02*

U.S. Cl. 313—86 **1 Claim**



A first grid electrode for use in a plural electrode electron gun comprising a cathode and related first and second grid electrodes having compatibly shaped adjacent functional surfaces. The apertured functional portion of the first grid is formed in a concave manner with the concavity thereof facing away from the cathode; the first grid having an aperture concavely coined within the concavity. The superfluous material resultant from the aperture coining is utilized adjacent thereto in forming an axially oriented annular rib which is shaped to protrude within the concavity.

3,767,954

CATHODE-RAY TUBE HAVING INDEXING STRIPS ON THE SCREEN FOR DETERMINING THE POSITION OF THE ELECTRON BEAM

Pieter Marinus Van Den Avoort, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

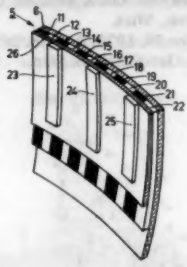
Filed Dec. 9, 1971, Ser. No. 206,285

Claims priority, application Netherlands, Dec. 29, 1970, 7018913

Int. Cl. H01j *29/18*

U.S. Cl. 313—92 BI **3 Claims**

A cathode-ray tube having indexing strips for determining the position of the electron beam. The width of the indexing strips increases in the direction of the edge of the screen in order to make the amplitude of the indexing signal emitted by



the indexing strips and received by a pick-up element independent as readily as possible of the place where the electron beam impinges upon the screen.

3,767,955

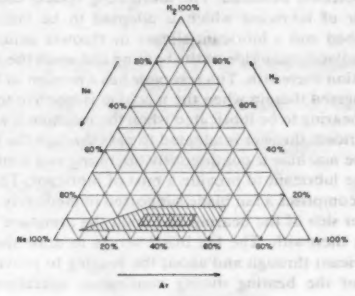
HIGH TEMPERATURE ULTRAVIOLET RADIATION DETECTOR

Robert G. Johnson, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 29, 1972, Ser. No. 267,269

Int. Cl. H01j *39/08*

U.S. Cl. 313—100 **4 Claims**



An ultraviolet sensitive, gaseous discharge detector of the Geiger-Muller type has a low spurious count rate and a prolonged lifetime at elevated temperatures. The gas filling of the detector comprises a gas mixture of neon and argon with a small amount of hydrogen added. The gas mixture of neon and argon substantially determines the breakdown voltage and ionization efficiency characteristics of the gas filling. The essential function of the hydrogen is to rapidly de-excite argon metastable atoms which would otherwise cause excessive spurious discharge counts.

3,767,956

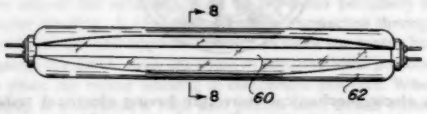
APERTURE FLUORESCENT LAMP FOR COPYING MACHINES

George Thomas Bauer, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 24, 1969, Ser. No. 887,846

Int. Cl. H01j *61/35, 61/42*

U.S. Cl. 313—109 **2 Claims**



An aperture fluorescent lamp wherein luminous flux is radiated uniformly along the aperture. In a first embodiment,

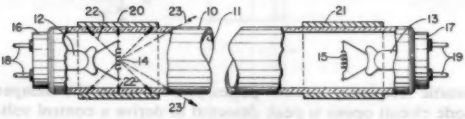
a variable area aperture is provided. In the second embodiment, a variable area reflector is formed on the outside surface of the lamp.

3,767,957

FLUORESCENT LAMP WITH SHIELDED ELECTRODES

John Nash Ott, Sarasota, Fla., assignor to John Ott Laboratories, Inc., Sarasota, Fla.

Continuation of Ser. No. 56,370, July 20, 1970, abandoned.
This application Mar. 17, 1972, Ser. No. 235,774
Int. Cl. H01j *61/35, 61/42*
U.S. Cl. 313—109 8 Claims



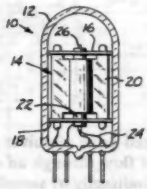
A fluorescent electric lamp of the type having a tubular envelope with electrodes at the ends between which an electric discharge occurs is provided with radiation shields around the electrodes to prevent emission of electrode radiation from the lamp.

3,767,958

ELECTRON DISCHARGE DEVICE HAVING INCREASED HEATER-CATHODE BREAKDOWN VOLTAGE

Wilbur H. Bingeman; Frank H. Grimone, and Donald R. Kerstetter, all of Emporium, Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,237
Int. Cl. H01j *1/00, 19/00;* H01k
U.S. Cl. 313—238 4 Claims



A heater-cathode breakdown voltage above about 8,000 to 9,000 v. is provided for certain electron discharge devices such as damper tubes employed in color television receivers. The increase is achieved by isolating the heater within a metallic cylinder which in turn is concentrically mounted within a cathode sleeve.

3,767,959

FILAMENT MOUNT FOR A SINGLE ENDED TUNGSTEN HALOGEN LAMP

Frederick J. George, Hamilton, Mass., and Edmund R. Kern, Hampton, N.H., assignors to Sylvania Electric Products Inc., Danvers, Mass.

Continuation of Ser. No. 780,678, Dec. 3, 1968, abandoned.
This application Feb. 24, 1971, Ser. No. 118,470
Int. Cl. H01j *1/92, 19/46;* H01k *1/18*
U.S. Cl. 313—271 5 Claims

A support wire, having a bend near one end, is inserted into the coiled leg of a tungsten filament having a coiled body. The coiled leg is flexible enough to permit complete insertion of the support wire therein and to adapt the shape of the leg to

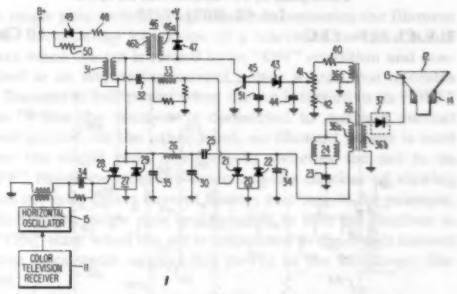
that of the wire. The filament and wire assembly is then heat treated to modify the tungsten microstructure and stabilize the filament.

3,767,960

HIGH VOLTAGE REGULATOR

Paul Raymond Ahrens, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed June 12, 1972, Ser. No. 261,627
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD 5 Claims



In a horizontal deflection and high voltage generating circuit in a television receiver, the high voltage is regulated to remain substantially constant with variations in picture tube beam current variation and receiver direct current power supply variation. A high voltage variation representative signal coupled to a regulator circuit is first integrated in a manner to increase regulator loop gain without increasing the dissipation in a regulator transistor.

3,767,961

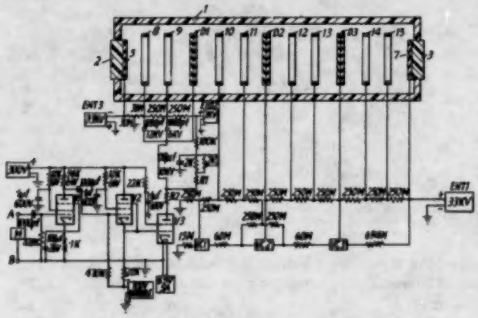
ARRANGEMENTS INCLUDING IMAGE INTENSIFIER DEVICES

Robert Paul Randall, Uxbridge, England, assignor to EMI Limited, Hayes, Middlesex, England

Filed Nov. 10, 1970, Ser. No. 88,392
Int. Cl. H01j *31/48*
U.S. Cl. 315—11 7 Claims

An image intensifier arrangement is operated in a manner which allows observance of preselected events which occur during the occurrence of other events which may mask them. Normally the first stage of the intensifier is operative while the second stage is inoperative. When a preselected event occurs, an electrical pulse circuit switches off the first stage and switches on the second and subsequent stages. The pulse circuit is triggered by a monitoring device which monitors the input signals to the intensifier. The intensifier output may be photographed. In another embodiment, the electrons from the

last stage, which may be the second stage, of the intensifier impinge on the target of a television camera tube. The target is



scanned by an electron beam and the television signals produced thereby may be displayed and/or recorded for display at a later time.

3,767,962

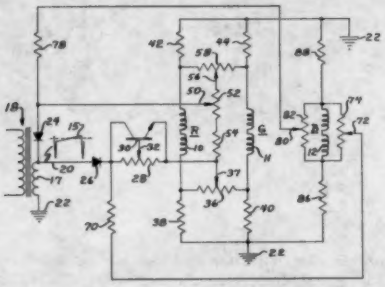
TELEVISION CONVERGENCE SYSTEM

Manohar L. Arya, Chicago, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed Jan. 3, 1972, Ser. No. 214,883

Int. Cl. H01j *29/50*

U.S. Cl. 315—13 C **10 Claims**



A vertical dynamic convergence circuit for the three convergence electromagnets associated with the R, B and G color beams of a tri-color CRT is energized by a single vertical deflection sawtooth waveform from a winding on the vertical output transformer. A pair of diodes separate the positive and negative portions of the sawtooth for coupling to a combined R and G beam control network, and a parallel connected B beam control network. The combined network includes a transistor emitter-follower for controlling the amplitude of one portion of the sawtooth, while isolating any effect on the other portion of the sawtooth.

3,767,963

HIGH VOLTAGE HOLD DOWN CIRCUIT

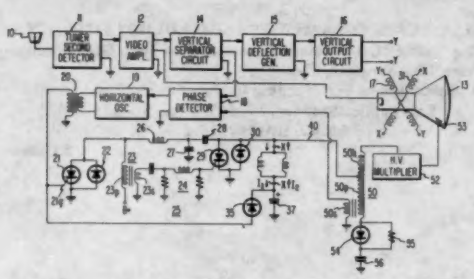
John J. McArdle, Indianapolis, and Robert L. Rauch, Greenfield, both of Ind., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 36,046, May 11, 1970, Pat. No. 3,697,800. This application Jan. 19, 1972, Ser. No. 218,989

Int. Cl. H01j *29/70*

U.S. Cl. 315—20 **4 Claims**

In a horizontal deflection circuit utilizing a voltage multiplier to develop the kinescope ultor voltage, any open circuiting of the damper diode can cause the input signal to the voltage multiplier to increase to the point at which the horizontal output stage will develop an excessive ultor voltage. In accordance with the invention, a positive component of the automatic frequency control pulses present when the damper diode circuit opens is peak detected to derive a control voltage to cause an avalanche diode coupled to the control element of a semiconductor output device to conduct, to prevent the high voltage from increasing.



3,767,964

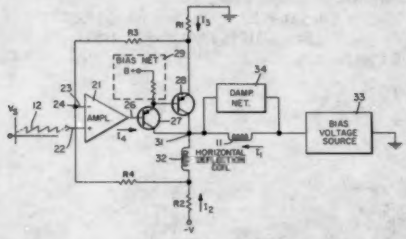
DRIVING CIRCUIT FOR MAGNETIC FIELD DEFLECTION COIL

George R. Varian, Palo Alto, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Dec. 2, 1970, Ser. No. 94,243

Int. Cl. H01j *29/76*

U.S. Cl. 315—27 TD **2 Claims**



A feedback stabilized drive circuit is provided in which the instantaneous current flow through an electron beam deflection coil is measured indirectly by sampling resistors which are electrically isolated from the immediate coil circuit to insure stability of the sampled current. The current sampling is employed to develop a relatively large amount of d.c. feedback across a high gain amplifier having an input for receiving the coil scanning signal and having an output consisting of a pair of transistors connected in a Darlington configuration for providing the necessary drive current to the deflection coil and for isolating the current sampling resistors from the immediate coil circuit.

3,767,965

HIGH INTENSITY LAMP CONTAINING INTERNAL SHORTING FUSE

Byron R. Collins, Euclid; Juris Sukcs, Cleveland, and Charles I. McVey, Shaker Heights, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

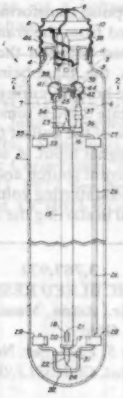
Filed Mar. 1, 1972, Ser. No. 230,761

Int. Cl. H01j *61/04*

U.S. Cl. 315—75 **9 Claims**

A high intensity lamp comprising an arc tube containing metal vapor such as sodium and mercury mounted within an

evacuated outer jacket based at one end. The possibility exists of a destructive power arc forming within the vacuum jacket should there occur a leak of air into the jacket or should the arc tube fail resulting in a partial pressure of gas in the outer



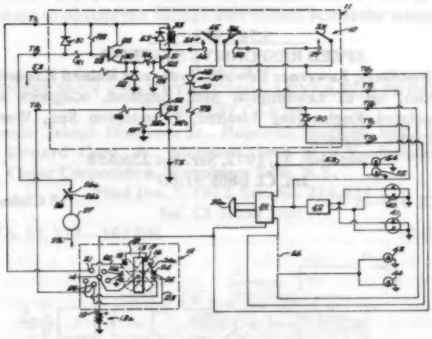
bulb. A self-shorting arcing fuse is provided within the jacket to extinguish such arc safely and end the life of the lamp. A second self-shorting arcing fuse may also be built into the base as an additional safety measure.

3,767,966

AUTOMATIC HEADLIGHT CONTROL SYSTEM FOR AUTOMOBILES

Robert L. Bell, 5990 N.E. 18th Ave., Fort Lauderdale, Fla.

Filed July 6, 1972, Ser. No. 269,443
Int. Cl. B60q *1/04*
U.S. Cl. 315—83 **9 Claims**



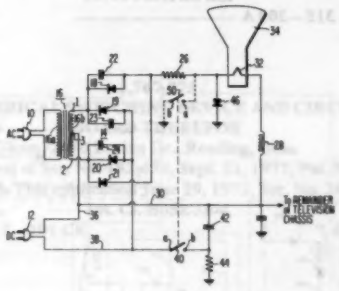
An electrical automobile headlight control device in modular form adapted for convenient interconnection with the electrical circuitry of automotive vehicles and serving as an automatically operating auxiliary device for appropriate control of the vehicle running lights under various conditions of vehicle operation is described. The electrical circuitry of the module is adaptable, by selective connection, to use in vehicles having accessory potential returned either to positive or negative vehicle battery, and includes means not only for automatically energizing the vehicle running lights upon the manually switching on of the vehicle windshield wipers but, as a principal feature, a memory means for retaining the running lights in operating condition until such time as the operator effects an additional manual control or adjustment, thereby preventing automatic turnoff of the vehicle running lights when needed for safe driving even after previous manual turning off of the windshield wiper switch.

3,767,967

INSTANT-ON CIRCUITRY FOR AC/DC TELEVISION RECEIVERS

David Warren Luz, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 24, 1971, Ser. No. 201,684
Int. Cl. H05b *39/00*
U.S. Cl. 315—94 **5 Claims**



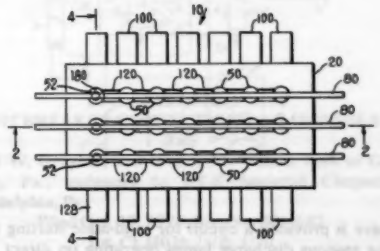
A single pole switching arrangement maintains the filament of the cathode-ray kinescope of a television receiver at full power when the set is turned to an "ON" condition and connected to an alternating current power source, but operates the filament at half power when the set is turned to its "OFF" state. When the receiver is connected to a direct current power source, on the other hand, no filament power is used when the single pole arrangement switches the set to its "OFF" condition, thereby extending the number of viewing hours between direct current battery re-charges, for example. Switching the single pole arrangement to turn the receiver to its "ON" state when the set is connected to the direct current source once again applies full power to the kinescope filament.

3,767,968

PANEL-TYPE DISPLAY DEVICE HAVING DISPLAY CELLS AND AUXILIARY CELLS FOR OPERATING THEM

James A. Ogle, Neshanic Station, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 881,024, Dec. 1, 1969, abandoned. This application Oct. 6, 1971, Ser. No. 186,915
Int. Cl. H01j *61/54*; H05b *41/00*
U.S. Cl. 315—169 TV **24 Claims**



A display device comprising a panel structure including a plurality of gas-filled display cells and including within the

body of the panel, gas communication channels extending between adjacent cells to facilitate the flow of masses of excited particles and the transfer of glow from one cell to another. The display panel also includes a plurality of particle-supply gas cells which are adapted to fire without fail and provide excited particles for use in firing said display cells.

3,767,969

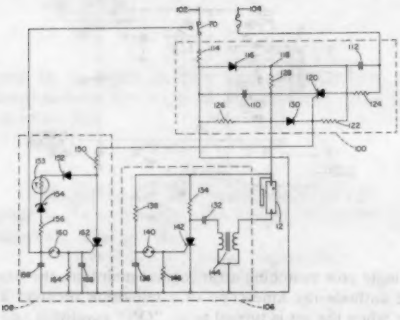
FLASHING CIRCUITRY

Roby Byron White, Cumberland, R.I., and Frederic Samuel Tobey, Hyde Park, Mass., assignors to W. H. Brady Co., Milwaukee, Wis.

Continuation-in-part of Ser. No. 122,930, March 10, 1971, abandoned. This application July 11, 1972, Ser. No. 270,659

Int. Cl. H05b *37/00*

U.S. Cl. 315—200 A **11 Claims**



Actuating a flashtube with circuitry which delivers a rapid succession of individual flash-producing pulses, and prevents further pulsing after the desired number of flashes. Preferably, capacitors are used to repeatedly store and discharge energy for firing the flash tube and timing the pulse cycles, in conjunction with SCR gating.

3,767,970

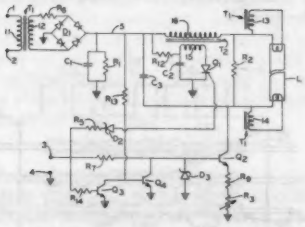
TURN ON/TURN OFF CIRCUIT FOR THE DIRECT CURRENT OPERATION OF GASEOUS DISCHARGE LAMPS

James R. Collins, Fort Wayne, Ind., assignor to General Electric Company, Indianapolis, Ind.

Filed Nov. 1, 1972, Ser. No. 302,794

Int. Cl. H05b *41/18*

U.S. Cl. 315—241 R **13 Claims**



There is provided a circuit for solid-state starting and ballasting gaseous discharge lamps operating on direct current. The circuit provides a means of positive turn off and turn on of gaseous discharge lamps. A direct current source is connected in series with a starting pulse transformer, a gaseous discharge lamp and a constant current ballast transistor. A resistor is connected across the lamp to shunt the ballast transistor off-state leakage current away from the lamp and a second transistor is connected to the base of the ballast transistor to provide a shunt path for the off-state leakage current away from the base-emitter junction of the ballast transistor. The starting circuit for the lamp, which comprises an SCR connected in series with a pulse transformer primary winding and a capacitor, is separated from the transistor ballast. A charging resistor is connected between the direct current source and the starting means, the value being large enough to conduct current below the holding current of the SCR so that it will commutate when gate drive is removed. The gate terminal of the SCR and the base of the ballast transistor are connected to a common control signal input. A second capacitor is connected to the direct current source and to the collector of the ballast transistor to bypass starting voltage spikes from the ballast transistor and to aid in starting the lamp.

3,767,971

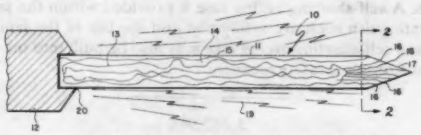
STATIC BLEED RESISTOR

Alexander J. Patrick, Jr., Acton, Mass., assignor to Avco Corporation, Cincinnati, Ohio

Filed May 5, 1971, Ser. No. 140,461

Int. Cl. H05f *3/00*

U.S. Cl. 317—2 R **4 Claims**



This invention covers a drain for electrostatic charge commonly called a static bleed resistor in which a resistance element forms the core of a composite structure which includes a non-tracking plastic resinous material. The core may be made from a fibrous tow, and in this event, one end of the fibers making up the tow may be exposed to the atmosphere to constitute the active bleeding elements.

3,767,972

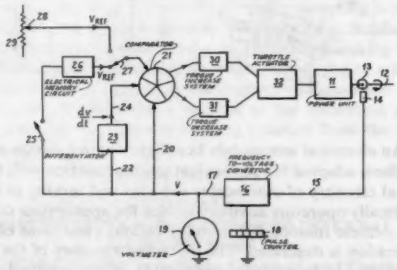
SPEED RESPONSIVE SYSTEMS

John Noddings; Lawrence Edward Hyde, and Roland Kenneth Borton, all of Leamington Spa, England, assignors to Associated Engineering Limited, Leamington Spa, Warwickshire, England

Filed Mar. 21, 1972, Ser. No. 236,658

Int. Cl. B60k *31/00*

U.S. Cl. 317—5 **5 Claims**



This invention relates to a speed responsive system for a motor vehicle whereby the vehicle may be kept at a predetermined speed, or the driver may be warned when a predetermined speed is reached. In one embodiment, the system includes an inductive pick-up or transducer, which senses rota-

tion of a ferrous-toothed disc rotatable with a shaft to generate a voltage dependent upon the rotational speed of the shaft. Means, comprising a potential divider or a memory circuit, are provided for generating a reference voltage, and a comparator circuit is provided for comparing the voltages, the comparator being arranged to emit or change its output signal when the speed responsive voltage, or a voltage derived therefrom, reaches the reference voltage.

3,767,973

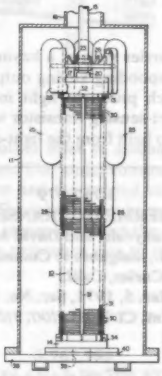
SHIELDED METAL ENCLOSED LIGHTNING ARRESTER

Norman K. Osmundsen, John E. Harder, both of Bloomington, Ind., and Tohei Nitta, Amagasaki, Japan, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 11, 1972, Ser. No. 296,720

Int. Cl. H02h *9/06*

U.S. Cl. 317—62 **10 Claims**



A high voltage lightning arrester enclosed in a grounded metal enclosure containing a pressurized insulating gas. The arrester is provided with an asymmetrical shield and grading means to control the voltage distribution across the arrester.

3,767,974

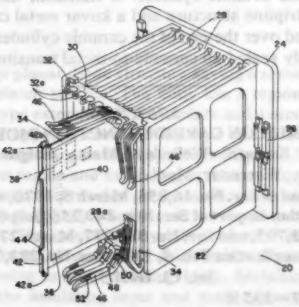
INSERTION AND EXTRACTION LEVER FOR PRINTED CIRCUIT CARDS

Daniel Joseph Donovan, Jr., Hopewell Junction, and Charles Edward Card, Jr., Philmont, both of N.Y., assignors to Cogar Corporation, Wappinger Falls, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,624

Int. Cl. H05k *5/00*

U.S. Cl. 317—101 DH **13 Claims**



A lever for aiding in inserting printed circuit cards into and extracting them from mating connectors mounted in a multiple card guiding arrangement. The cards ride in individual slots in a multiple card cage, and during insertion they can be guided freely until the card's output conductors initially confront the receiving connector block at the rear of the cage. At this point, cylindrical bosses on corresponding upper and lower levers are positioned to contact a reinforced edge of the card, with pivoting action by the lever driving the card into the cage and urging the card's conductors into their mating connectors. Rotation of the levers in the opposite direction brings another cylindircal boss on each lever into contact with an inner surface of the card's reinforced edge, extracting the card conductors from the connector block and permitting free-sliding removal of the card from the cage.

3,767,975

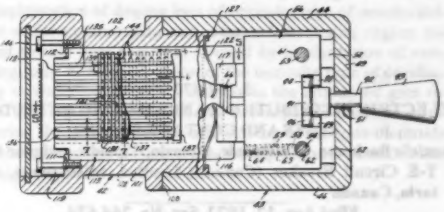
ELECTRICAL SWITCHING DEVICE AND CIRCUIT BOARD THEREFOR

Ashley C. Glenn, 2440 Darian Dr., Reading, Ohio

Division of Ser. No. 182,454, Sept. 21, 1971, Pat. No. 3,689,715. This application June 29, 1972, Ser. No. 267,383

Int. Cl. H05k *1/04*

U.S. Cl. 317—101 CE **4 Claims**



A switching device which includes a housing in which a plurality of circuit boards are mounted for transverse movement into and out of operative position. A circuit board actuator is mounted in the housing and movable therealong to positions at which it is engageable with selected ones of the circuit boards for moving the circuit boards. Each circuit board has contacts which are engageable with contacts in the housing and means interconnecting selected circuit board contacts. Each circuit board includes a plate-like body with spaced conductive strips on both faces thereof terminating at a contact edge thereof.

3,767,976

CIRCUIT BREAKER CONNECTION TO GAS INSULATED BUS

Howard W. Graybill, and Walter M. Wilson, both of Greensburg, Pa., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.

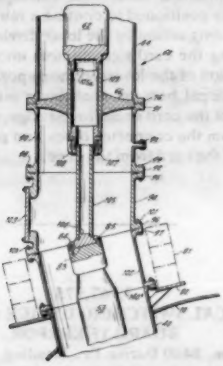
Filed Oct. 27, 1972, Ser. No. 301,642

Int. Cl. H02b *1/18, 1/20*

U.S. Cl. 317—103 **8 Claims**

A gas-filled disconnect switch is mounted above and connected to a gas circuit breaker bushing. The switch is mechanically supported by the breaker tank. A removable

conductor and grounded enclosure section between the switch and circuit breaker permits removal of current transformers



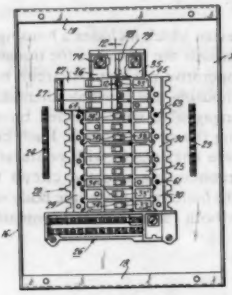
and of the circuit breaker without depressurizing the disconnect switch or removing power from the bus connected to the disconnect switch.

3,767,977

ELECTRIC DISTRIBUTION PANEL HAVING EXTRUDED BUSES AND CONTACT STABS

Anatole Bachman, Willowdale, Ontario, Canada, assignor to I-T-E Circuit Breaker (Canada) Limited, Mississauga, Ontario, Canada

Filed Apr. 17, 1972, Ser. No. 244,674
Int. Cl. H02b *1/20*
U.S. Cl. 317—119 **8 Claims**



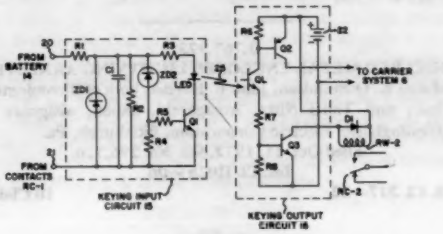
A panelboard for use with plug-in type circuit breakers is constructed with extruded main bus bars having integrally formed male stabs for the electrical connection of the circuit breakers. The bus bars are mounted to the rear of an insulating base, and the stabs extend through aperture means in the base to a position forward thereof. Mounting rails for locating and mechanically securing the circuit breakers are mounted along opposite sides of the insulating base, and a common fastening means operatively secures the locating rails to the insulating base and secured the insulating base to the rear wall of the panelboard enclosure.

3,767,978

VOLTAGE-ISOLATING, KEYING ARRANGEMENT FOR A POWER-LINE CARRIER SYSTEM

Andreas Wernli, Charlottesville, Va.

Filed Mar. 17, 1972, Ser. No. 235,595
Int. Cl. H01h *47/24*
U.S. Cl. 317—124 **5 Claims**



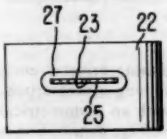
In a power-line carrier system, a keying input circuit is isolated from its corresponding keying output circuit by a light-emitting diode which produces light in response to keying signals, and by a light-sensing transistor which supplies output signals in response to light from the light-emitting diode.

3,767,979

MICROWAVE HERMETIC TRANSISTOR PACKAGE

Robert L. Reber, Sunnyvale, and David M. Duncan, San Francisco, both of Calif., assignors to Communications Transistor Corporation, San Carlos, Calif.

Filed Mar. 5, 1971, Ser. No. 121,511
Int. Cl. H01l *5/00, 3/00*
U.S. Cl. 317—234 R **9 Claims**



A ceramic stripline structure having an input stripline and an output stripline is mounted upon an electrically and thermally conductive base structure for attachment to a heat sink. A hollow ceramic cylinder is bonded at one end to the base structure in surrounding relation to the stripline structure. The ceramic cylinder is slotted on opposite sides for passage of input and output strip conductive leads therethrough for connection to the input and output striplines within the package. The input and output strip conductive leads are hermetically sealed to the ceramic cylinder. A transistor die is mounted over the stripline structure and a kovar metal cap is hermetically sealed over the end of the ceramic cylinder to provide a hermetically sealed all ceramic-to-metal transitor package.

3,767,980

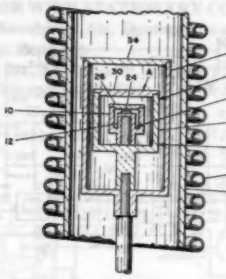
SILICON CARBIDE JUNCTION DIODE

G. Sanjiv Kamath, Wellesley, Mass., assignor to Norton Company, Worcester, Mass.

Division of Ser. No. 16,855, March 5, 1970, which is a continuation-in-part of Ser. Nos. 840,255, July 9, 1969, Pat. No. 3,565,703, and Ser. No. 810,977, March 27, 1969. This application Feb. 4, 1972, Ser. No. 223,739
Int. Cl. H05f *33/00*
U.S. Cl. 317—235 R **3 Claims**

The production of electroluminescent silicon carbide junction diodes is described. These diodes are preferably produced by growth from a silicon carbide or carbon solution in silicon formed between a surface of a *p* or *n*-type silicon carbide base

crystal and a source of carbon atoms such as a block of solid carbon. The silicon contains one or more *p* or *n*-type impurities so that a *p-n* junction is formed on the crystal. A multistratum epitaxial layer is grown on the base crystal by providing immediately adjacent the base crystal a layer of silicon having one impurity concentration and providing at a remote spot in



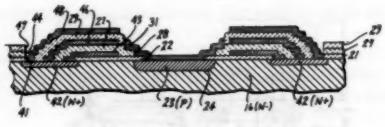
the reaction zone another mass of silicon having a different impurity concentration. The initial stratum is grown at a relatively low temperature and the second stratum is grown at a higher temperature. The initial stratum can be very thin (less than .0005 inch) and transparent and the second stratum can be opaque and of low resistance due to codoping with boron and aluminum.

3,767,981

HIGH VOLTAGE PLANAR DIODE STRUCTURE AND METHOD

Bohumil Polata, Los Altos, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed June 4, 1971, Ser. No. 149,945
Int. Cl. H01l 9/00
U.S. Cl. 317—235 R **1 Claim**



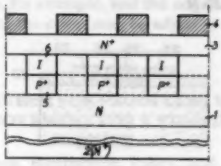
High voltage planar diode structure having a semiconductor body with a planar surface. The body has a region of a first conductivity type extending to the surface and a second region in the body of opposite conductivity type and also extending to the surface and being defined by a dish-shaped P-N junction within said first region and extending to the surface. A layer of insulating material is provided on the surface and has an opening therein exposing the surface in an area overlying the second region. The insulating layer is graduated in thickness so that it becomes progressively thicker in a direction away from the opening in the insulating layer. Metallic means is disposed on the insulating layer and makes contact to said second region through the opening in the insulating layer and forms a field plate which generally overlies the depletion layer which is formed during operation of the diode.

3,767,982

ION IMPLANTATION FIELD-EFFECT SEMICONDUCTOR DEVICES

Stanislas Teszner, 49 Rue de la Tour, Paris; Daniel P. Lecrosnier, La Clarte, and Gerard P. Pelous, 18 Rue des Bons Enfants, both of Perros-Guirec, Paris, all of France

Filed Aug. 4, 1972, Ser. No. 277,878
Claims priority, application France, Aug. 5, 1971, 7128793
Int. Cl. H01l 11/00
U.S. Cl. 317—235 P. **3 Claims**



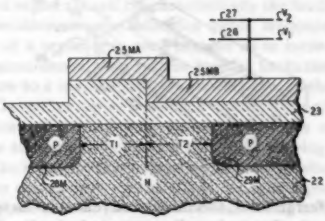
Field-effect semiconductor device comprising a wafer of semi-conductor material of one type of conductivity, a drain electrode on one surface of said wafer, an implantation metal mask on the other surface thereof, said mask having solid zones and openings, and a plurality of conducting channels perpendicular to said drain electrode and mask and positioned beneath the mask solid zones. A buried gate region is devised by implantation of doping ions of opposite type of conductivity to wafer conductivity and a buried insulating region adjacent to said gate region is devised by implantation of non-doping ions. A diffused region of the opposite type of conductivity to wafer conductivity extends to the implanted gate region. The implantation mask has two separate parts, the first covering the diffused region and serving as the gate electrode and the second covering the conducting channel positions and serving as the source electrode.

3,767,983

CHARGE TRANSFER DEVICE WITH IMPROVED TRANSFER EFFICIENCY

Carl Neil Berglund, Ottawa, Ontario, Canada, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 23, 1972, Ser. No. 282,962
Int. Cl. H01l 11/14
U.S. Cl. 317—235 R **9 Claims**

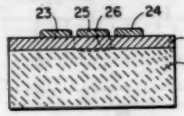


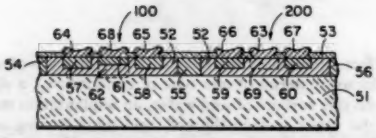
The transfer efficiency of a bucket-brigade charge transfer device is improved by adapting the transfer regions between successive storage sites such that in each transfer region at least two distinct threshold voltages occur, with the greater threshold voltage being in the trailing portion of the transfer zone with respect to the direction of advance of information. Advantageously, the differences in threshold voltage in each transfer region are realized through differences in oxide thickness or differences in the doping of the transfer region.

3,767,984
SCHOTTKY BARRIER TYPE FIELD EFFECT TRANSISTOR

Daizaburo Shinoda, and Nobuo Kawamura, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 66,997, Aug. 26, 1970, abandoned. This application Sept. 13, 1972, Ser. No. 288,903
Claims priority, application Japan, Sept. 3, 1969, 44/70202; Nov. 29, 1969, 44/96087
Int. Cl. H01l *11/14*
U.S. Cl. 317—235 R 3 Claims



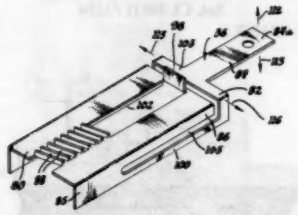


A Schottky barrier gate field effect transistor is capable of operating in the enhancement mode. The transistor includes a gallium arsenide layer formed on a substrate. The relationship between the thickness W and impurity concentration N of the gallium arsenide layer is given by the expression:
$2 \times 10^3 cm^{-1/2} < W \cdot \sqrt{N} < 3 \times 10^3 cm^{-1/2}$.

3,767,985
ACTUATOR ASSEMBLY

Dallas E. King, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 20, 1972, Ser. No. 308,279
Int. Cl. H02k *7/06*
U.S. Cl. 310—83 3 Claims

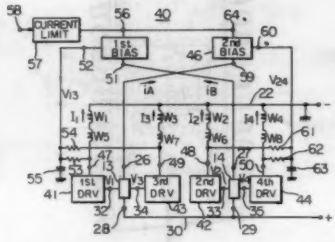


In a preferred form, this disclosure relates to an actuator assembly for moving a pivotally supported member in opposite directions between first and second positions. The actuator assembly includes a reversible electric motor means having an armature shaft for rotating a worm about its longitudinal axis, a guide means having an opening therein for receiving the worm, a rack supported and guided by the guide means for linear movement in opposite directions and which is in meshed engagement with the worm and operatively connected with the member to be moved. The rack includes first and second resilient arm means which are flexible in directions laterally of the path of movement of the rack and normal to each other so that flexibility is provided in two directions as the rack is linearly moved to pivotally move the member between its positions.

3,767,986
DRIVE CIRCUIT FOR BRUSHLESS MOTOR

Kinzo Wada, Kanagawa-ku, Yokohama City, Japan, assignor to Victor Company of Japan, Tokyo, Japan

Filed Nov. 30, 1972, Ser. No. 310,785
Claims priority, application Japan, Nov. 30, 1971, 46/96493
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 4 Claims

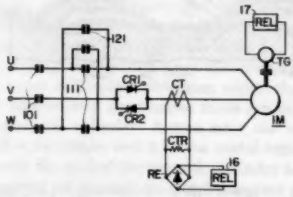


A drive circuit arrangement for driving a two or four-phase brushless motor which generally comprises a pair of Hall generators mounted on the stator of the motor in such a manner as to be spaced from each other through a rectangular electric angle, at least two drivers for energizing the field coils of the motor in dependence on the output voltages of the Hall generators, and a pair of biasing circuits one of which biases one of the Hall generators in accordance with the intensity of the field current flowing through a field coil associated with the other Hall generator, thereby to maintain uniform the field currents flowing through the respective phase field coils.

3,767,987
CONTROL APPARATUS FOR AN INDUCTION MOTOR

Nobuo Mitsui, Katsuta-shi; Akinori Watanabe, Katsuta; Kazuo Numata, Yokohama; Isao Fukushima, Katsuta; Katsu Komuro, Katsuta, and Takanobu Hatakeyama, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 20, 1972, Ser. No. 235,922
Claims priority, application Japan, Mar. 19, 1971, 46/15155
Int. Cl. H02p *1/40*
U.S. Cl. 318—203 R 15 Claims



A control apparatus for an induction motor comprising a three phase induction motor, a three phase alternating current source for supplying a three phase alternating current voltage for the induction motor, parallel thyristors connected in the reverse direction to each other and inserted in an arbitrary phase of the three phase alternating current source for controlling the current flowing therethrough, contactors for changing the main circuit of the induction motor so as to reverse the direction of the phase rotation of the alternating current voltage when the induction motor is in a single phase operation by control of the thyristors, and a control device for

operating the thyristors to substantially eliminate the current flowing therethrough in response to a reduction command and to increase the current again when the contactors complete changing the main circuit.

3,767,988

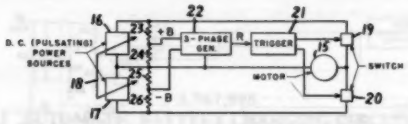
MOTOR CONTROL CIRCUIT AND THREE-PHASE GENERATOR WITH STATIONARY COMPONENTS

Arne Jensen, Havnbjerg Als, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Division of Ser. No. 755,190, Aug. 26, 1968, Pat. No. 3,597,638. This application Dec. 3, 1970, Ser. No. 94,934

Int. Cl. H02p *5/28*

U.S. Cl. 318—227 **4 Claims**



An electrical three-phase generator and motor control circuit. The generator is made of three alike wave-generating units in cascade each generating a respective trapezoidal wave corresponding to a respective phase of the generator. Each unit comprises a small detector in series with a control circuit varying the amplitude of the wave proportionately to a control voltage representative of and corresponding to variations of voltage from voltage sources and applied to a motor and an integrating circuit consisting of an integrating amplifier and an integrating capacitor and a double limiter in parallel therewith. The control voltage is developed by a voltage divider across the motor control circuit.

3,767,989

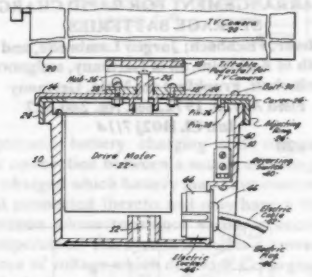
TELEVISION CAMERA SCANNER SUPPORT ASSEMBLY

Davies Allport, La Jolla, Calif., assignor to Karl F. Kuhle, San Diego, Calif.

Filed Sept. 11, 1972, Ser. No. 288,068

Int. Cl. H01h *3/16*

U.S. Cl. 318—266 **4 Claims**



An improved scanner support assembly is provided for a surveillance type of television camera, and which turns the camera back and forth through an adjustable arc. The support assembly of the invention includes a housing having a rotatably mounted cover which supports the television camera. A drive motor is mounted in the housing, and it is mechanically coupled to the cover to turn the cover and the television camera supported thereby about the central axis of the housing through a predetermined arc. Limit switching means are provided which causes the motor to reverse at the ends of the arc, so that the cover and the television camera are rotated back and forth through the arc. The limit switching means is in the form of a reversing switch connected to the motor, and which is actuated by a pair of pins. A first pin depends from the cover, and it engages the reversing switch when the cover and television camera are turned in a particular direction and to a particular angular position. The other pin depends from a ring, and it actuates the reversing switch to its other position when the camera is turned in the other direction to a second angular position. The ring is attached to the cover by bolts, for example, and the angular position of the ring with respect to the cover may be adjusted.

3,767,990

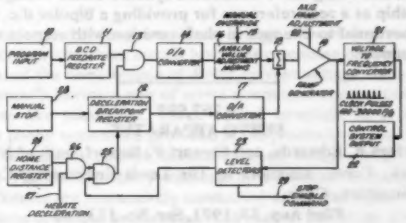
CONTROL SYSTEM FOR PRODUCING MULTI-AXIS CONTOUR MOVEMENT FOR A STEPPING MOTOR DRIVE

Marvin L. Kreithen, Huntingdon Valley, and John J. Lawler, Newportville, both of Pa., assignors to Bridgeport Machines, Inc., Bridgeport, Conn.

Filed Feb. 9, 1972, Ser. No. 224,752

Int. Cl. G05b *19/24*

U.S. Cl. 318—573 **14 Claims**

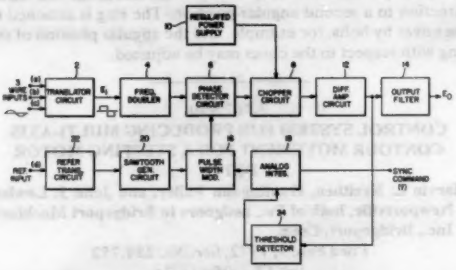


A multi-axis machine tool or the like employing controls for an open loop stepping motor system of two or more axes in which variable frequency feedrate clock pulses are generated to ultimately control the speed of the various stepping motors. The frequency of the feedrate clock pulses is modified in accordance with programmed information; additional information defines the tool path which can either be straight line or circular arc segments and characteristically the feedrate clock pulse generation means increases pulse frequency at the beginning of a segment in such manner as to increase motor speed in accordance with system inertial limitations from a speed below to a speed above the slewing rate of the stepping motors. Thereafter upon sensing a predetermined distance from the end of the segment, pulse frequency is reduced to reduce the stepping motor speed below the slewing rate. The feedrate clock pulse chain is used by the interpolation logic to trigger two consecutive calculations, the time lapse between the clock pulse and the second calculation being so short compared to the time lapse between consecutive clock pulses, that the action initiated by the results of the calculations can be considered for all intents and purposes to be coincident with the clock pulse. The first calculation always generates a major axis interpolation pulse, during the second calculation an error accumulation register is tested to determine whether a minor axis interpolation pulse should be generated to minimize the error from the programmed path. Thus the major axis interpolation pulse chain corresponds directly to the frequency of the feedrate clock chain, the minor axis interpolation pulse chain may be irregular with respect to the chain of feedrate clock pulses. A predetermined member of interpolation pulses are then used to generate each of the major and minor axis step pulses so that any irregularity in minor axis pulse frequency is eliminated and resolution is improved.

3,767,991
MICROELECTRONIC THREE-WIRE SYNCHRONIZER

Robert L. James, Bloomfield, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Aug. 31, 1972, Ser. No. 285,296
Int. Cl. G05b 1/01
U.S. Cl. 318—606 9 Claims

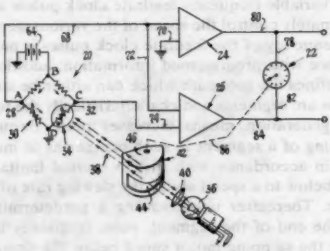


A three-wire synchronizer includes a system of microcircuits interfaced for determining with minimum interaction and at a command instant the position of a synchro transmitter shaft, and using the Y-connected synchro stator voltage relationship as a zero reference for providing a bipolar d.c. signal proportional to changes in shaft position with respect to the reference.

3,767,992
SERVO APPARATUS

Harrison F. Edwards, and Stewart F. Bottorf, both of Naugatuck, Conn., assignors to The Lewis Engineering Comp., Naugatuck, Conn.

Filed Aug. 23, 1971, Ser. No. 173,748
Int. Cl. G05b 1/06
U.S. Cl. 318—640 14 Claims

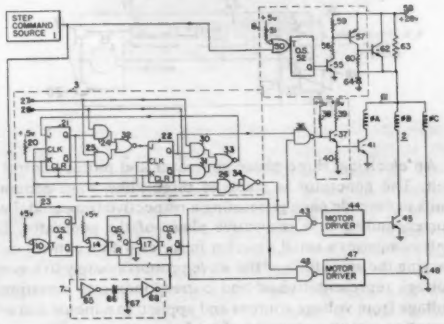


A servo device which has but a single movable part that is essentially frictionless and which thus eliminates the usual gears and instead utilizes a galvanometer-type movement in a servo feedback loop arrangement. The galvanometer is associated with a bridge circuit and a novel light-cell control which is actuated by the galvanometer. The novel control comprises a movable element adapted to modify a light beam which is produced for the purpose of striking the light cell disposed in one bridge leg, and which originates at an electric lamp. Another leg of the bridge includes a condition-responsive element responding to heat, cold or other conditions in a manner to unbalance the bridge, the balance of which is then re-established by deflection of the galvanometer to activate the light control so as to modify the influence of the light cell (in the one bridge leg). The position of the movable element or coil of the galvanometer can be an indication of the magnitude of the cold, heat or other condition which is being monitored. The device can function as a position transducer for angular or linear values, as a basic function generator, including an electrical as well as mechanical output. By virtue of the single moving part there is had a desirable simplicity and reduced cost, with lower maintenance expense while at the same time accuracy is not sacrificed.

3,767,993
STEPPING MOTOR CONTROL CIRCUIT

Robert E. Yablonski, Orange, Calif., assignor to Electronic Engineering Co. of California, Santa Ana, Calif.

Filed Aug. 25, 1971, Ser. No. 174,823
Int. Cl. H02k 37/00
U.S. Cl. 318—696 11 Claims

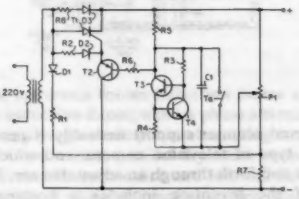


A stepping motor circuit in which the electrical damping period for locking the rotor is automatically inversely variable according to the speed of operation. Three monostable relaxation devices provide required timing for effective stepper motor drive. A differentiating circuit resets either one or two of these devices to decrease the period of damping at high stepping rates. Typically, for high stepping rates, the motor supply voltage is increased to rapidly accelerate the rotor and Zener semiconductor breakdown is used to subsequently dissipate energy from the motor coils.

3,767,994
CIRCUIT ARRANGEMENT FOR RAPID CHARGING OF STORAGE BATTERIES

Wilfried Dittmar, Fischbach; Jurgen Lambrette, and Hermann Schatz, both of Kelkheim, all of Germany, assignors to Varta Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 3, 1972, Ser. No. 240,622
Int. Cl. H02j 7/14
U.S. Cl. 320—20 12 Claims



A circuit arrangement for the rapid charging of a storage battery having a positive polarity terminal and a negative polarity terminal with a pulsating current and with a discharge circuit has a power input and at least one switch connected

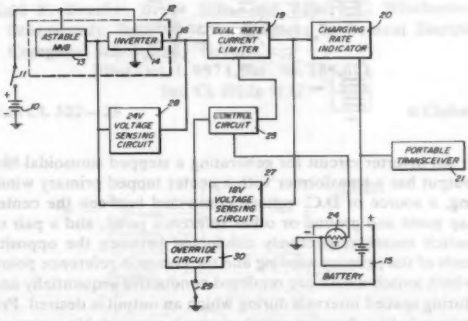
between the power input and the storage battery. A discriminator element is connected to the storage battery for sensing the voltage of the storage battery during the pauses in the current flow and for controlling the switch via the discriminator element. The discriminator element is connected across the storage battery. The discriminator element comprises first and second transistors each having emitter, collector and base electrodes. The base electrode of the first transistor is connected to the collector electrode of the second transistor. The emitter electrode of the first transistor is connected to the base electrode of the second transistor. A first resistor is connected in series circuit arrangement with a potentiometer between the emitter electrode of the second transistor and the negative polarity terminal of the storage battery. At least one circuit is connected between the first resistor and the input side of the switch and includes a first diode and a second resistor.

3,767,995

AUTOMATIC BATTERY CHARGING CIRCUIT OPERABLE OVER A WIDE TEMPERATURE RANGE

Philip G. Kaminski, Sunrise; Brian H. Moisand, Plantation, and Bruce M. Stone, Pompano Beach, all of Fla., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 17, 1972, Ser. No. 254,212
Int. Cl. H02j 7/14
U.S. Cl. 320—22 **21 Claims**



An automatic battery charging and voltage regulating system for connection between a source of voltage and a battery to be charged which battery may have current consuming equipment connected thereto and may have a thermistor attached thereon whose resistance varies in accordance with battery temperature. The system includes a converter coupled to the source of voltage which develops a charging voltage for charging the battery, a current control circuit is coupled to the converter and to the battery and operates to limit the maximum charging current to the battery to a first level if there is no thermistor or if the thermistor resistance exceeds a predetermined amount, and to the second level, if the thermistor resistance is below the predetermined amount. A voltage sensing circuit is also provided which senses the battery voltage in excess of a predetermined level and reduces the charging voltage developed by the converter.

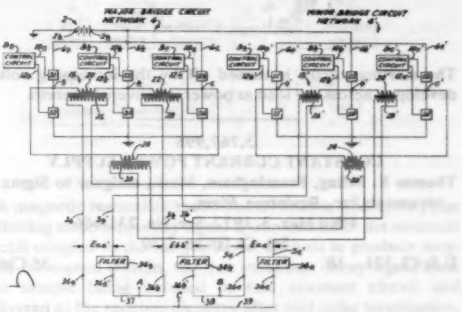
A first circuit may also be provided which upon actuation of the current consuming equipment causes the current control circuit to limit the charging current to the first higher maximum charging current.

3,767,996

LOW FREQUENCY MULTI-PHASE SINEWAVE GENERATOR CIRCUIT

James W. Bates, Palos Verdes Estates, Calif., assignor to Gulton Industries, Inc., Metuchen, N.J.

Filed Oct. 28, 1971, Ser. No. 193,299
Int. Cl. H02m 1/12
U.S. Cl. 321—9 A **12 Claims**



A major and at least one minor bridge network is provided each comprising three circuit branches extending between the output of the same source of direct current voltage, each circuit branch having a pair of series connected current control devices like transistors. Three output terminals of a three phase power system are provided at the junctures of the three pairs of current control devices of each bridge circuit network. The three primary windings of a different three-phase transformer are respectively connected across the three combinations of output terminal pairs of each of the bridge circuit networks. The two transformers have different turn ratios to produce outputs of different amplitudes. The pair of current control devices of each circuit branch of each bridge circuit network are rendered conductive in a given alternating repetitive switching sequence which is identical to that used for the other circuit branches of the same bridge circuit network but differeing in phase by 120°. This results in identical alternating pulsed outputs differing in phase by 120° across the primary windings of the associated transformer. The secondary winding associated with each primary winding of the transformer associated with the major bridge circuit network is connected in series with the secondary winding having a similarly phased signal of the transformer associated with each minor bridge circuit network to produce a sinusoidal-like stepped voltage waveform which is filtered to produce a progressively varying sinusoidal-like voltage.

3,767,997

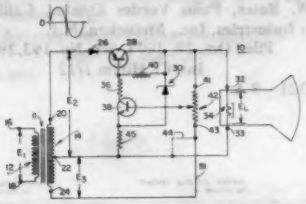
POWER REGULATOR HAVING RAPID TURN-ON CIRCUIT

Robert R. Del Ciello, 7809 Cressett Dr., Elmwood Park, Ill.

Continuation-in-part of Ser. No. 67,060, Aug. 26, 1970, abandoned. This application Aug. 19, 1971, Ser. No. 173,172
Int. Cl. H02m 7/20
U.S. Cl. 321—18 **13 Claims**

The power regulator includes a pass transistor connected between a first supply providing a first unregulated pulsating d.c. voltage and load whose resistance is initially low, but rises to a higher value as power is supplied thereto. An amplifying transistor controls the current flow through the pass transistor and load. A zener diode limits the amplitude of the load voltage. A second supply provides a control voltage to the amplifying transistor which regulates the output power by shaping the output voltage waveform. A starting circuit, connected

between a power supply, the load and the amplifying transistor, initially supplies starting current for the regulator.



The starting circuit is turned off by the increasing voltage developed across the load as power is delivered thereto.

3,767,998

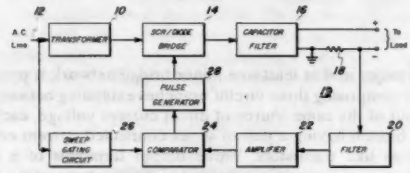
CONSTANT CURRENT POWER SUPPLY

Thomas E. Beling, Framingham, Mass., assignor to Sigma Instruments Inc., Braintree, Mass.

Filed Mar. 3, 1972, Ser. No. 231,666

Int. Cl. H02m *7/20*

U.S. Cl. 321—18 **35 Claims**



In the power supply disclosed, a bridge rectifier receives alternating current and forms a unidirectional voltage across a filter capacitor. A thyristor in each of two adjacent arms of the bridge controls the voltage produced. A suitable amplifier biases a control potential sensed by a current sensing resistor and applies it to one side of a comparator. A sweep circuit forms a periodic waveform that remains substantially zero for one half of each period and rises during the second half of the period in a path that corresponds to the last quarter of a sine wave cycle. The comparator triggers the thyristors each time the sweep waveform exceeds the biased control potential. Each sweep period is formed during a half cycle of the input voltage, so that two sweeps occur for each cycle of input voltage.

3,767,999

CONTROL MEANS FOR STATIC CONVERTERS

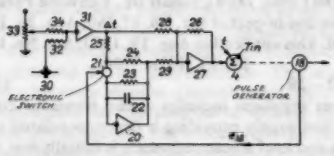
Ake Ekstrom, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed May 22, 1972, Ser. No. 257,466

Claims priority, application Sweden, June 22, 1971, 8067/71

Int. Cl. H02m *1/08*

U.S. Cl. 321—18 **5 Claims**



An arrangement for phase angle control of converters which is intended to deliver to a control device for the converter rectifier a signal to set the phase angle of the control pulses includes a control circuit to the input side of which is delivered the difference between the real value and a desired value of the converter current. When the control circuit is stationary, the difference between the current values as well as the signal delivered to the control device is zero. The circuit includes a compensator connected between the input side and the output side of the control circuit, the input side of the compensator being connected to the control circuit over a connecting member which is briefly connected in by the control pulses to the converter rectifiers. The output side of the compensator is connected to the output side of the control circuit in such a way that the output signal of the compensator is subtracted from the original output signal of the control circuit.

3,768,000

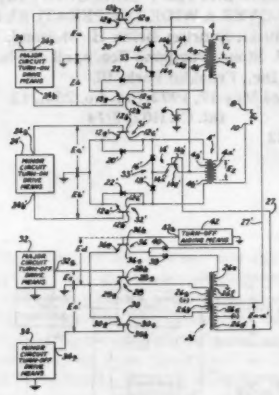
STEPPED SINUSOIDAL-LIKE WAVEFORM GENERATING INVERTER CIRCUIT

James W. Bates, Palos Verdes Estates, Calif., assignor to Gulton Industries, Inc., Metuchen, N.J.

Filed Dec. 2, 1971, Ser. No. 204,237

Int. Cl. H02m *7/52*

U.S. Cl. 321—27 MS **11 Claims**



An inverter circuit for generating a stepped sinusoidal-like output has a transformer with a center tapped primary winding, a source of D.C. voltage connected between the center tap point and ground or other reference point, and a pair of switch means respectively connected between the opposite ends of the primary winding and the common reference point, which switch means are rendered conductive sequentially and during spaced intervals during which an output is desired. Primary winding shunting switch means is connectable across all or half of the primary winding to short circuit that part of the winding carrying current to produce a substantially zero output between each pair of said spaced intervals. The primary winding shunting switch means most advantageously is a transistor or the like whose load terminals are connected between the center tap point of the primary winding and the juncture of a pair of diodes respectively connected to the opposite ends of the primary winding.

3,768,001

INVERTER FOR TRANSMITTING POWER BETWEEN A DIRECT VOLTAGE SOURCE AND AN ALTERNATING VOLTAGE NETWORK

Kjeld Thorborg, Vasteras, Sweden, assignor to Allmanna Svenska Elecktriska Aktieholaget, Vasteras, Sweden

Filed Jan. 20, 1972, Ser. No. 219,393

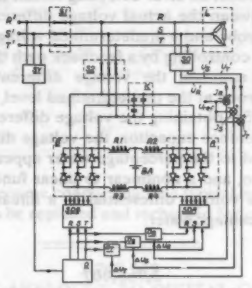
Claims priority, application Sweden, Jan. 1, 1971, 795/71.

Int. Cl. H02m *7/48*

U.S. Cl. 321—27 R **10 Claims**

An oscillator-controlled, self-commutated inverter connection for generating a single- or multi-phase alternating voltage

and transmitting power from a direct voltage source to an alternating voltage consumer includes two inverter units, each including capacitor bank connected to the AC terminals of the inverter unit and a converter of the line-commutated type. The AC outputs of the converter are connected to the AC ter-



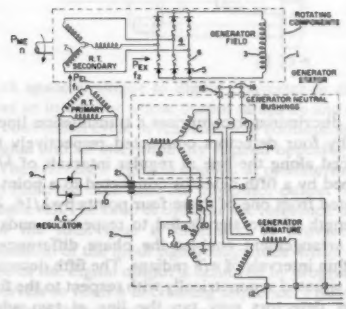
minals of the inverter unit and the DC outputs are connected to the DC source. Reactor connections connect the DC outputs of the converter to the poles of the DC source. A second converter of the line-commutated type is connected by its DC outputs to the DC source. The two converters are anti-parallel connected to the DC source.

3,768,002

GENERATOR EXCITATION SYSTEM WITH ROTATING ELECTROMAGNETIC ENERGY CONNECTOR AND INTERNAL WINDING POWER SOURCE

Karl F. Drexler, Burnt Hills, and Robert L. Winchester, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,671
Int. Cl. H02p *9/32*
U.S. Cl. 322—25 **6 Claims**



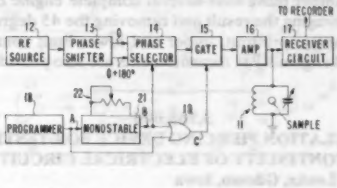
A static excitation system for self-excitation of a large generator with an electromagnetic energy converter having a rotating secondary winding supplying power through rotating rectifiers to the generator field. An AC regulated power source for the primary winding of the electromagnetic energy converter is supplied from internal windings in the generator stator having current-responsive and potential-responsive characteristics to provide a "compounded" power source. The potential-responsive winding is preferably located in the main winding slots to link the main synchronous flux of the generator field, while the current-responsive winding links with flux produced by the generator main armature winding.

3,768,003

PULSED RESONANCE SPECTROMETER SYSTEM EMPLOYING IMPROVED RADIO FREQUENCY PULSE TURN-OFF METHOD AND APPARATUS

Richard E. Amen, Menlo Park, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Sept. 27, 1971, Ser. No. 184,146
Int. Cl. G01n *27/78*
U.S. Cl. 324—0.5 R **13 Claims**



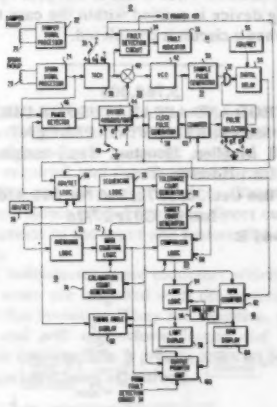
A magnetic resonance spectrometer system wherein a pulse of driving radio frequency signal is transmitted to the resonant circuit coupled to the sample under analysis to produce magnetic resonance therein, the free induction decay signal from said sample being induced in said resonant circuit and delivered to the receiver circuitry after said pulse termination, the ringing signal induced in the receiver circuitry due to energy decay in the resonant circuit after the radio frequency pulse termination being substantially reduced by reversing the phase of the radio frequency transmitter signal just prior to said pulse termination, and then terminating the pulse when the radio frequency transmitter voltage at said resonant circuit is at the zero crossing value.

3,768,004

ENGINE TIMING COMPUTER

Albert C. Abnett, Westerville, and Robert A. Boley, Columbus, both of Ohio, assignors to Autech, Inc., Columbus, Ohio

Filed Jan. 20, 1972, Ser. No. 219,250
Int. Cl. F02p *17/00*
U.S. Cl. 324—16 R **33 Claims**



There is disclosed a method and apparatus for internal combustion engine timing based on measurement of the advance or retard of the firing of each spark plug with respect to a reference derived from the top dead center position of the piston for the number one cylinder. The engine timing is adjusted so that the average value of the advance or retard for all plugs equals a predetermined design value. A variable frequency oscillator is phase-locked by signals representing individual spark plug firing to operate at a frequency of 3,600

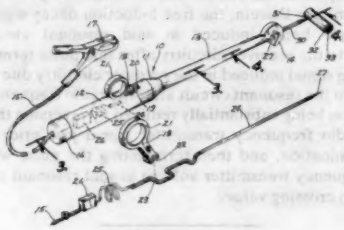
pulses per engine revolution. A reference related to the top dead center position of piston for the first cylinder is determined by sensing a notch in the engine damper or fan pulley, and is used to produce a series of pseudo damper pulses offset from the top dead center positions of the various pistons by 45 degrees by dividing the output of the variable frequency oscillator and selecting pulses to define the pseudo damper pulse interval based on the number of cylinders in the engine being timed. Timing measurement is achieved by counting the number of pulses between firing of a plug and the associated pseudo damper pulse over several complete engine operating cycles, averaging the result and removing the 45 degree offset. Digital display, printout, upper and lower limit computation and actual engine RPM measurements are also provided.

3,768,005

INSULATION PIERCING DEVICE FOR TESTING CONTINUITY OF ELECTRICAL CIRCUIT

Robert A. Louks, Gilman, Iowa

Filed Mar. 24, 1972, Ser. No. 237,721
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 **4 Claims**



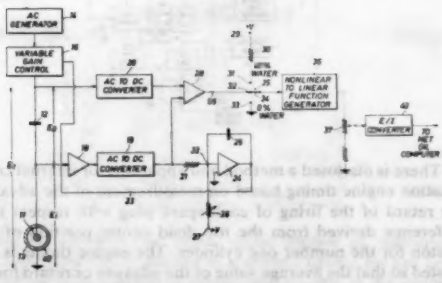
A circuit tester having a tubular non-conductive case with a conductive probe reciprocally carried therewithin. The probe is movable by a trigger mounted on the case and has a pointed end for piercing insulation covering a wire in a circuit to be tested. A hook is provided at one end of the case, and a conductive extension extending from the hook is aligned with the movable probe such that upon moving the probe forward it contacts the extension when a line is not held by the hook. A signal emitting device is carried within the case to indicate to an operator when a circuit is completed.

3,768,006

METHOD AND APPARATUS FOR DIRECT MEASUREMENT OF PERCENT

Allen Howard Mueller, Houston, Tex., assignor to Daniel Industries, Inc., Houston, Tex.

Filed Oct. 30, 1972, Ser. No. 301,826
Int. Cl. G01r *27/26*
U.S. Cl. 324—61 R **40 Claims**



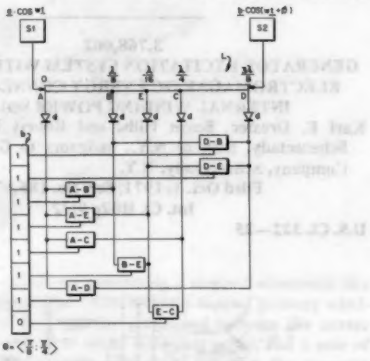
In one preferred embodiment, a percentage water measuring circuit is shown by providing a capacitance probe for measuring the capacitance of an oil-water emulsion, a reference capacitor of known value in series with capacitance probe, a variable gain a-c voltage generator connected in series with the reference capacitor and the capacitance probe for applying an a-c voltage across each, a voltage measuring circuit for measuring the actual voltage differential across the capacitance probe, an error detecting circuit for detecting the difference between the actual voltage differential across the capacitance probe and a predetermined voltage, the error detecting circuit controlling by a feedback path the variable gain generator to maintain the voltage differential across the capacitance probe at the predetermined level, a voltage measuring circuit for obtaining the voltage differential appearing across the reference capacitor, the voltage differential being directly related to the percentage water appearing in the oil-water emulsion, and a nonlinear to linear function generator to convert the voltage differential to a linear function with respect to percentage water.

3,768,007

TAPPED DELAY LINE PHASE DISCRIMINATOR

Timothy Conrad Tozer, Salfords, near Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 19, 1972, Ser. No. 273,346
Claims priority, application Great Britain, Aug. 3, 1971, 36,390/71
Int. Cl. G01r *25/02*; G04f *9/00*
U.S. Cl. 324—84 **5 Claims**



A phase discriminator comprises a transmission line which is tapped by four detectors connected respectively to four points spaced along the line at regular intervals of λ/8. The line is tapped by a fifth detector connected to a point on the line separated from one of those four points by λ/16, λ being the wavelength of two signals fed to respective ends of the line. This arrangement enables the phase difference to be located within intervals of π/8 radians. The fifth detector may suitably be situated symmetrically with respect to the first four two further detectors may tap the line at two additional tapping points, one being located λ/32 from an end tapping-point and the other additional point being 3λ/32 from a penultimate tapping-point: this enables the phase difference to be located within intervals of π/16 radians.

3,768,008

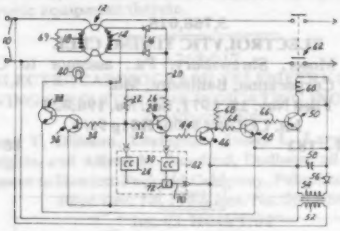
COULOMETRIC METERING DEVICE

Allyn N. Goshy, 813 Queens La., Anoka, Minn., and Russell L. Rehm, Rt. 5, Box 69, Excelsior, Minn.

Filed Sept. 20, 1972, Ser. No. 290,573
Int. Cl. G01r *11/44*
U.S. Cl. 324—94 **6 Claims**

Electric metering device including at least two coulometric cells which experience a sharp voltage rise upon deplating.

The current is metered by passing current through one cell until it is deplated, whereupon the sharp voltage rise causes a



second cell to become conducting. In a typical application, the cells would then be replaced and recharged for reuse.

3,768,009

MARK-SPACE ANALOGUE TO DIGITAL CONVERTERS

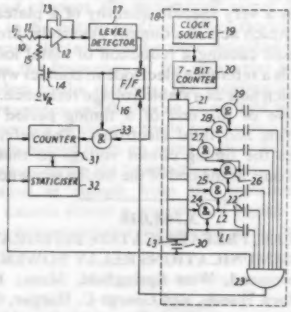
Howard Anthony Dorey, and Eric Metcalf, both of Farnborough, England, assignors to The Solartron Electronic Group Limited, Farnborough, England

Filed Oct. 16, 1970, Ser. No. 81,358

Claims priority, application Great Britain, Oct. 29, 1969, 53,058/69

Int. Cl. G01r *17/06*; H03k *13/02*

U.S. Cl. 324—99 D 8 Claims



A mark space analogue to digital converter or digital voltmeter has an integrator whose output ramps up and down during one conversion cycle in response to a continuously applied input signal and an intermittently applied opposing reference signal. The reference signal is applied at predetermined intervals and removed each time the integrator output returns to a detection level. The ratio of the time the reference signal is applied to the total time is measured to provide a digital representation of the input signal magnitude. More rapid convergence of the digital output is achieved by programming the said intervals to form a decreasing sequence. Preferably each interval is half the preceding interval.

3,768,010

DEVICE FOR DETECTING IRREGULARITIES IN THE SHAPE OF A WORKPIECE DURING MACHINING

Mario Pozetti, Bologna, Italy, assignor to Finike Italiana Marposs-Soc. in Accomandita Semplice di Mario Possati & Co., Bologna, Italy

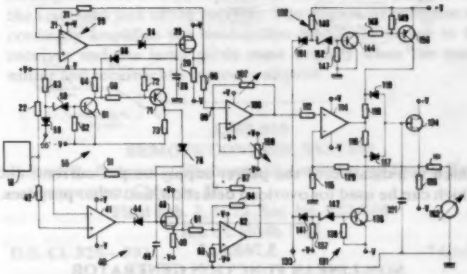
Filed Dec. 21, 1971, Ser. No. 210,445

Claims priority, application Italy, Jan. 1, 1971, 3322 A/71

Int. Cl. G01r *19/16*, *7/00*

U.S. Cl. 324—103 P 4 Claims

Apparatus for detecting irregularities in the shape of a workpiece during machining, comprising a first capacitive memory means for memorizing the maximum dimension of the workpiece at an adjustable predetermined time, second capacitive memory means for memorizing the minimum



dimension of the workpiece at the same time and means for determining the difference between the memorized maximum and minimum dimensions.

3,768,011

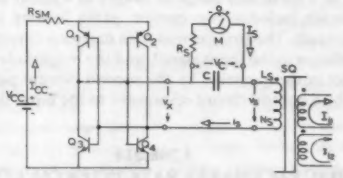
MEANS FOR MEASURING MAGNITUDE AND DIRECTION OF A DIRECT CURRENT OR PERMANENT MAGNET, INCLUDING CLIP-ON DIRECT CURRENT SENSING INDUCTOR

William H. Swain, 4662 Gleason Ave., Sarasota County, Fla.

Filed June 9, 1970, Ser. No. 44,761

Int. Cl. G01r *33/00*, *33/02*

U.S. Cl. 324—117 R 16 Claims



A direct current or magnetic intensity input produces an offset in the average magnetic intensity applied to a sense inductor core of non-linear magnetic material. No electrical connection is required, and the measured current need not be interrupted. The core is coupled to an oscillator constructed so that the duty factor modulation and direct current output are linear functions of the input and restore the average magnetic intensity.

Clip-on DC milliameter sense inductors which largely cancel magnetic noise are included with the description of embodiments of this invention. They are sensitive, small in size, inexpensive, and will outperform larger and more costly devices. Power consumption is greatly reduced because fewer components are used more effectively.

3,768,012

POWER SUPPLY CURRENT DETECTOR SYSTEM

Bruce L. Wilkinson, Torrance, Calif., assignor to Pioneer Magnetics, Inc., Santa Monica, Calif.

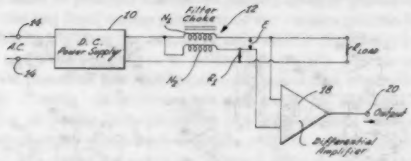
Filed May 8, 1972, Ser. No. 251,251

Int. Cl. G01r *19/16*

U.S. Cl. 324—127 5 Claims

A power supply current detector system is provided which includes the filter choke inductor of the power supply, and

which uses the winding resistance of the filter choke as a current sensor. The system of the invention produces an output



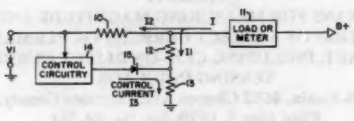
which is indicative of the power supply output current, and which can be used for overload detection, and other purposes.

3,768,013

NON-LINEAR FUNCTION GENERATOR

George W. Kessler, Schenectady, N.Y., and Jerry L. Stratton, Canon City, Colo., assignors to General Electric Company, Schenectady, N.Y.

Filed Feb. 11, 1971, Ser. No. 114,547
Int. Cl. G01r 15/10; G06g 7/12
U.S. Cl. 324—132 8 Claims



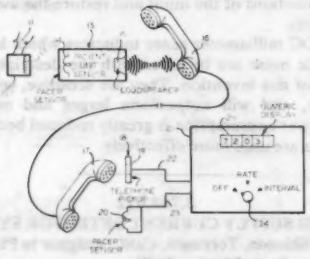
A circuit for producing a non-linear output signal in response to a linear input signal which may be used, for example, to increase the sensitivity of a meter or other modulating circuit to a particular range or ranges of a linear input signal. The circuit includes two current paths feeding the load or meter circuit. The first current path carries a current inversely proportional to the input signal, and the magnitude of the load or meter current carried by the second current path is determined by a control circuit responsive to the input signal.

3,768,014

CARDIAC PACEMAKER RATE/INTERVAL COMPUTER SYSTEM

John H. Smith, Milwaukee, Wis.; James W. Conley, Scotia, and Stanley E. Dworak, Mechanicville, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 28, 1972, Ser. No. 221,696
Int. Cl. G01r 23/02; G04f 9/00
U.S. Cl. 324—158 R 6 Claims



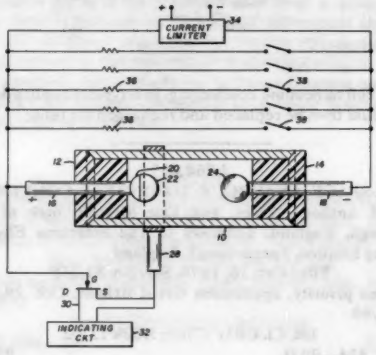
Information signals taken directly from an implanted pacemaker or remotely by way of a telephone circuit are furnished to a computer which processes the information and displays it in digital form in terms of the pacemaker's stimulus pulse rate or, alternatively, in terms of the interval between pulses. The existing rate or interval is compared with prior measurements and is used to determine the pacemaker's residual battery life.

3,768,015

ELECTROLYTIC TIMING CELL

James R. Moser, Shrewsbury, Pa., assignor to Catalyst Research Corporation, Baltimore, Md.

Filed Nov. 15, 1971, Ser. No. 198,829
Int. Cl. G04f 9/00; H01g 9/16
U.S. Cl. 324—182 10 Claims



An electrolytic timing cell utilizing three electrodes, one of which contains a very specific quantity of a plateable metal, the second of which acts as a dummy electrode through which current is passed causing a reduction of metal ions, and the third of which is a reference electrode in contact with the electrolyte and which acts as a stable voltage reference. An output signal indicative of the end of a timing period is derived between the first and third electrodes. The reference electrode stabilizes the timing circuit voltage so that a voltage change occurs only at the end of the timing sequence.

3,768,016

MODULAR, PREFABRICATED, INTEGRATED COMMUNICATIONS RELAY TOWER

George R. Townsend, West Springfield, Mass.; Edmund J. Price, Bradford Woods, and George C. Harper, Coraopolis, both of Pa., assignors to Pittsburgh-Des Monies Steel Company, Pittsburgh, Pa.

Filed June 1, 1972, Ser. No. 258,852
Int. Cl. H04b 7/14
U.S. Cl. 325—1 12 Claims

An integrated, modular, prefabricated communications relay tower, comprising a plurality of tubular modules

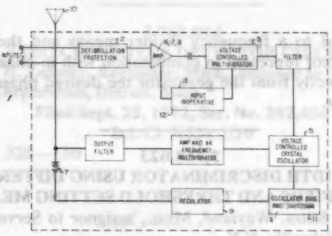
prefabricated in a shop facility with the necessary accessory devices therein and assembled in end-to-end relationship at the site of the relay tower to provide a complete integrated, modular relay tower with the necessary accessory devices and electronic equipment therein.

3,768,017

ELECTROCARDIOGRAPH TELEMETRY SYSTEM HAVING CIRCUITRY FOR INDICATING INOPERATIVE CONDITIONS

Richard F. Dillman, Lexington; James L. Larsen, Needham Heights, and Alfred M. Nardizzi, Dedham, all of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 14, 1971, Ser. No. 207,859
Int. Cl. H04b 1/00
U.S. Cl. 325—48 **7 Claims**



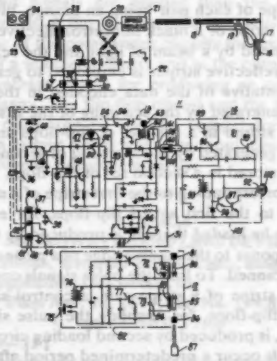
Special circuitry in the transmitter of an electrocardiograph (ECG) telemetry system detects various malfunctions of the system and changes the transmitted signal to indicate their presence to the system receiver. When the transmitter detects that an input electrode has become detached from the patient, it changes the frequency of the subcarrier signal to indicate this problem to the receiver. The receiver monitors the subcarrier frequency and flashes an alarm light when the frequency corresponds to the electrode inoperative condition. When the voltage output from an aging battery becomes too low to adequately energize the transmitter, special circuitry stops the transmission of signals from the transmitter. When the receiver cannot detect a transmitted signal, it indicates that either the battery needs replacement or the transmitter is out of range.

3,768,018

TRANSMITTER-RECEIVER ALIGNMENT SYSTEM AND METHOD

Andrew F. Deming, Alliance, Ohio, assignor to The Alliance Manufacturing Company, Inc., Alliance, Ohio

Filed Mar. 30, 1972, Ser. No. 239,452
Int. Cl. H04b 1/00
U.S. Cl. 325—67 **20 Claims**



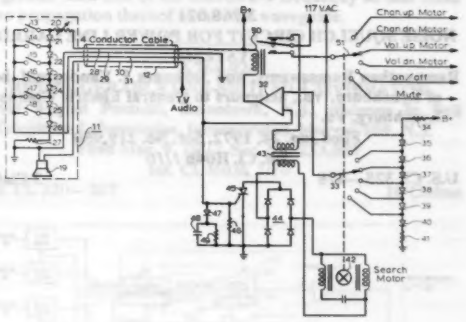
An alignment system to align the frequencies of a transmitter and receiver is disclosed. The modulation frequency of the transmitter is tunable and may be aligned to that of the receiver by radiating a signal into an unenergized receiver. Induction coupling between the transmitter and receiver establishes transfer of energy into the modulation frequency circuits of the receiver. An alignment indicator which includes an amplifier and an output indicator lamp may be plugged into the test point jack of the receiver. The alignment indicator accordingly amplifies the modulation frequency signal in the receiver and the lamp glows most brightly when the transmitter and receiver are correctly aligned.

3,768,019

REMOTE CONTROL SYSTEM

Robert R. Podowski, Elmhurst, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Feb. 2, 1972, Ser. No. 222,740
Int. Cl. H04b 1/16
U.S. Cl. 325—391 **7 Claims**



A wired remote control system for effecting a plurality of adjustments to a television receiver from a remote location with a minimum number of interconnecting conductors utilizes discrete voltage levels generated within its control head to discriminate between adjustment-functions. A discrete voltage is selected from a voltage divider in the control head for each adjustment-function to be performed, and in the receiver a commutator cyclically selects voltages from a second voltage divider until the locally-selected voltage agrees with the remotely-generated voltage, at which time power is supplied through a second ganged commutator switch to an appropriate actuator for performing the desired function. The elements of the two voltage dividers each comprise series-connected diodes, increasing system reliability and obviating the need for costly precision resistors.

3,768,020

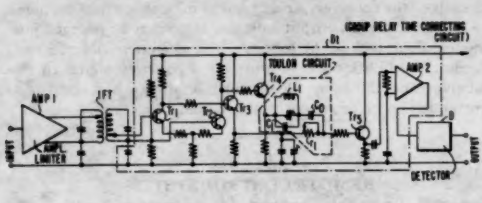
GROUP DELAY TIME CORRECTING CIRCUIT INCLUDING A TOULON CIRCUIT FOR USE IN AN INTERMEDIATE-FREQUENCY AMPLIFYING CIRCUIT

Hirotaka Kurata, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Dec. 29, 1971, Ser. No. 213,615
Claims priority, application Japan, Dec. 29, 1970, 45/121486
Int. Cl. A04b 1/06
U.S. Cl. 325—347 **5 Claims**

A group delay time correcting circuit including a toulon circuit for use in an intermediate-frequency amplifying circuit. The intermediate-frequency amplifying circuit is comprised of an amplitude limiter, a group delay time correcting circuit and a detector circuit coupled to the output of the group delay time correcting circuit. The group delay time correcting circuit includes a differential amplifier for converting the input signals thereto from the amplitude limiter into two signals equal in amplitude but opposite in phase. The output of the

differential amplifier is applied to a Toulon circuit comprised of a series connected reactance circuit and a resistor. The output of the Toulon circuit is taken at the junction between the



reactance circuit and the resistor. The reactance circuit of the Toulon circuit is constructed so as to have at least one resonance point and one anti-resonance point.

3,768,021

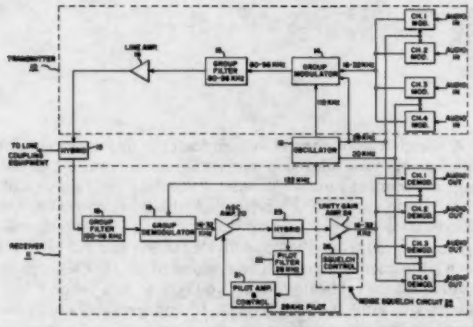
NOISE SQUELCH CIRCUIT FOR POWER LINE CARRIER SYSTEMS

Ramanathan Ramaswamy, and Johannes J. Vandegraaf, both of Lynchburg, Va., assignors to General Electric Company, Lynchburg, Va.

Filed Jan. 24, 1972, Ser. No. 219,950

Int. Cl. H04b *1/10*

U.S. Cl. 325—478 **3 Claims**



In a power line carrier receiver for a band of high-frequency carrier signals that are amplitude-modulated with information signals, a narrow-band pilot signal and attendant noise, both in the band of high-frequency carrier signals, are used to provide a squelch signal. The pilot signal is detected and integrated, and the integrated signals that exceed a selected direct current magnitude are used to produce a trigger signal. The trigger signal is used to block the information-carrying high-frequency carrier signals, and thus provide noise squelch.

3,768,022

APPARATUS FOR GENERATING PHASE MODULATED ELECTRICAL SIGNALS IN RESPONSE TO A MEASURED ANGULAR OR LINEAR DISPLACEMENT

Karl Lang, Atzbach, Germany, assignor to Ernst Leitz GmbH, Wetzlar, Germany

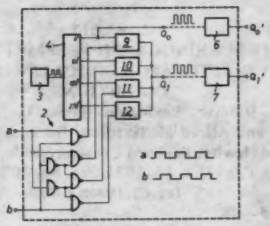
Filed Dec. 4, 1972, Ser. No. 311,775

Claims priority, application Germany, Dec. 8, 1971, P 21 60 880.0

Int. Cl. H03k *21/00*

U.S. Cl. 328—39 **7 Claims**

The digital output signals of an incremental path or angle measuring system are converted into phase modulated electrical signals by conducting the phase-shifted output signals via a gating circuit to the first input means of gates of which the second input means are supplied with the pulses of a generator which are phase-shifted relative to one another by a fixed degree. The signals derived from the output means of the gates



are supplied to a frequency divider means and the output signals thereof represent in combination with in-phase pulses derived directly from the generator the desired phase-modulated signals.

3,768,023

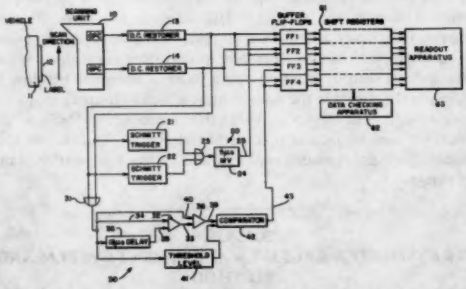
PULSE WIDTH DISCRIMINATOR USING DIFFERENCE AMPLIFIERS AND THRESHOLD SETTING MEANS

Francis H. Stites, Wayland, Mass., assignor to Servo Corporation, Hicksville, N.Y.

Division of Ser. No. 138,682, April 29, 1971, Pat. No. 3,689,898. This application Apr. 14, 1972, Ser. No. 244,307

Int. Cl. H03k *5/20*

U.S. Cl. 328—111 **2 Claims**



An information processing system in which data is encoded in labels having an array of stripes arranged in a plurality of selected stripe-pair code combinations; the first stripe of each pair being an orange, blue or white retroreflective stripe and the second stripe of each pair being an orange, blue, or white retroreflective stripe or a black nonretroreflective stripe. The stripes are scanned by a beam of light and the reflected light from the retroreflective stripes is employed to generate pulse signals representative of the data encoded in the label. The pulse signals generated by the scanning of the first stripe of a stripe-pair are stored in a first set of flip-flops and the pulse signals, if any, generated by the scanning of second stripe of a stripe-pair are stored in a second set of flip-flops. To load the pulse signals corresponding to the first stripe of a stripe-pair, a control signal to the first set of flip-flops, for enabling the pulse signals to be loaded therein, is produced by first loading circuitry in response to the leading edge of a pulse signal as the stripe-pair is scanned. To load the pulse signals corresponding to the second stripe of a stripe-pair, a control signal to the second set of flip-flops, for enabling the pulse signals to be loaded therein, is produced by second loading circuitry only if the pulse signals occur a predetermined period after the leading edge of a pulse signal derived from the first stripe of a stripe-pair. The predetermined period (15 microseconds) is

equal to the maximum width of a pulse signal generated by a single stripe, and therefore causes pulse signals generated by the scanning of the second stripe of a stripe-pair to be loaded into the second set of flip-flops. The second loading circuitry includes a first difference circuit to which the various pulse signals are applied. The pulse signals are also delayed by 15 microseconds and applied to the first difference circuit. The output of the first difference circuit is the difference between the pulse signals and the delayed pulse signals. The pulse signals and the output of the first difference circuit are applied to a second difference circuit. Thus, the second difference circuit produces an output pulse during the period the second stripe of a stripe-pair is being scanned, but only if the second stripe is reflective. This output pulse is coupled to the second set of flip-flops for causing pulse signals generated by scanning of the second stripe to be loaded therein.

3,768,024

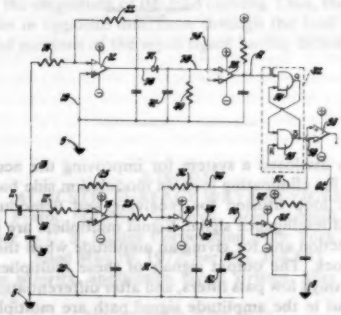
ZERO CROSSOVER DETECTOR CIRCUIT

Vincent H. Letosky, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 25, 1972, Ser. No. 292,456

Int. Cl. H03k *5/20*

U.S. Cl. 328—150 **3 Claims**



First and second amplifiers amplify and invert the alternating current input signal. The output signal of one of the amplifiers is re-inverted by an inverter circuit which produces an output signal in phase with the input signal. The output signals of the other amplifier and the inverter are compared with respective direct current reference signals by respective comparator circuits which produce respective output signals of the same polarity when the magnitude of the amplifier and inverter output signals are greater than the corresponding reference signals. A flip-flop circuit is responsive to the output signal of one of the comparator circuits for producing an output signal of a selected polarity and to the output signal of the other comparator circuit for producing an output signal of another polarity. The flip-flop circuit and the inverter output signals are compared by another comparator circuit which produces an output signal when the input signal crosses zero from a negative to a positive polarity.

3,768,025

MICROWAVE SAMPLING DEVICE

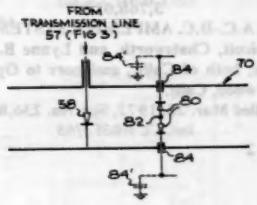
Michael A. Hreha, Redondo Beach, Calif., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Nov. 18, 1971, Ser. No. 199,898

Int. Cl. H03k *17/00*

U.S. Cl. 328—151 **17 Claims**

A broadband microwave sampling device employing a balanced arrangement of matched semiconductor sampling diodes mounted in a waveguide adjacent a step recovery diode across which sampling pulses are generated for coupling to the sampling diodes by propagation through the waveguide. The microwave signal to be sampled is coupled to the sampling



diodes by a transmission line which passes through the waveguide. The waveguide is chosen to have a cut off frequency greater than that of the microwave frequency so that there is no propagation thereof within the waveguide.

3,768,026

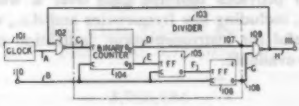
RETRIGGERABLE ONE-SHOT MULTIVIBRATOR

David August Pezzutti, Eatontown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 9, 1972, Ser. No. 233,087

Int. Cl. H03k *3/10*

U.S. Cl. 328—207 **10 Claims**



A retriggerable one-shot multivibrator is realized by employing a plurality of inverting logic gates, a digital divider and a clock circuit. A first logic gate is used to control the supply of clock pulses to the divider. A second logic gate responds to the divider output to yield the desired multivibrator output and to control the first logic gate. The one-shot multivibrator is triggered by clearing the divider.

3,768,027

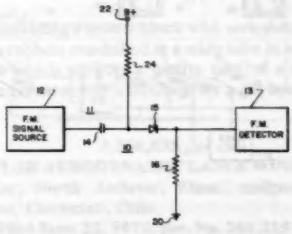
FM LIMITER USING SINGLE DIODE

Lester Tuvker Matzek, Chicago, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed Aug. 18, 1971, Ser. No. 172,762

Int. Cl. H03d *3/00*

U.S. Cl. 329—134 **4 Claims**



A limiter circuit for an FM detector including a diode serially connected in the signal path between the FM signal source and the FM detector. A current source biases the diode into conduction. The limiter conducts low level FM signals without substantial alteration, suppresses low frequency signals, and

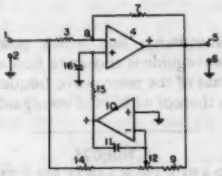
limits the output when the input reaches a predetermined amplitude.

3,768,028

A.C.-D.C. AMPLIFIER SYSTEM

Henry O. Wolcott, Chatsworth, and Lynne B. Goldstein, W. Los Angeles, both of Calif., assignors to Optimation, Inc., North Hollywood, Calif.

Filed Mar. 22, 1972, Ser. No. 236,883
Int. Cl. H03f 3/68
U.S. Cl. 330—2 9 Claims



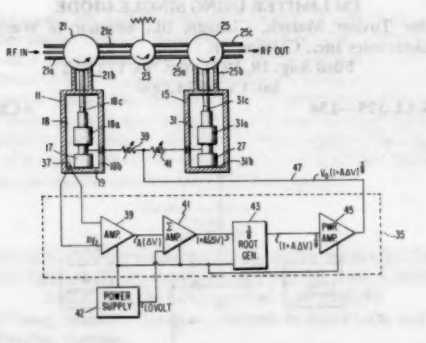
A wide-band a.c., stable d.c., amplifier system employing a wide-band operational amplifier and an integrator-feedback high-gain essentially d.c.-amplifying operational amplifier. The system provides uniform gain over a wide band of frequencies, including low frequencies and d.c., with precise stability useful for instrumentation. Indication of abnormal operation is available.

3,768,029

TEMPERATURE COMPENSATION OF TRANSFERRED ELECTRON AMPLIFIERS

Chainulu Lakshminarasimha Upadhyayula, Cranbury, and Barry Stuart Perlman, Hightstown, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Sept. 11, 9172, Ser. No. 287,712
Int. Cl. H03f 3/10
U.S. Cl. 330—5 4 Claims



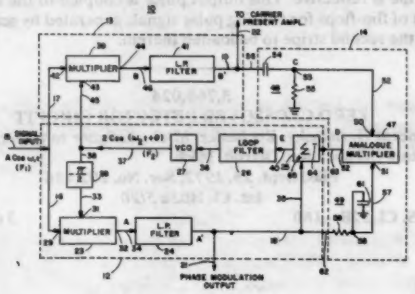
A stable linear transferred electron amplifier operable over a wide temperature range with relatively constant gain and band width is provided by sensing the temperature changes and by varying the operating bias to the amplifier in accordance with those temperature changes.

3,768,030

AUTOMATIC SIGNAL ACQUISITION MEANS FOR PHASE-LOCK LOOP WITH ANTI- SIDEBAND LOCK PROTECTION

Kenneth H. Brown, Phoenix, and Arthur J. Kline, Jr., Scottsdale, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 8, 1972, Ser. No. 251,065
Int. Cl. H03b 3/04
U.S. Cl. 331—12 9 Claims



There is disclosed a system for improving the acquisition range and for eliminating lock on modulation side bands of a phase-lock loop utilized for receiving and demodulating a transmitted intelligence signal. Signal multipliers are used for phase detection and for giving an amplitude when the loop is in phase lock. The output signals of these multipliers, after passing through low pass filters, and after differentiation of the filter output in the amplitude signal path are multiplied in a four-quadrant analogue multiplier. The output signal of this analogue multiplier, which includes a D.C. term developed as a result of the differentiation which is sign sensitive to the frequency offset, is summed with the output signal of the low pass filter in the phase detector signal path to give a total loop control signal which contains the indicated D.C. term when the offset frequency differs from zero. The D.C. term is scaled to have a magnitude greater than the periodic term of the ordinary control signal resulting from phase-lock onto sidebands of the received signal. When the offset frequency is zero, the D.C. term and the other offset frequency terms disappear and only the ordinary loop control signal remains.

3,768,031

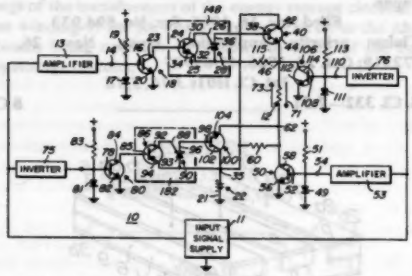
BRIDGE AMPLIFIER SUITABLE FOR MANUFACTURE IN MONOLITHIC INTEGRATED CIRCUIT FORM

Charles Martin Ring, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed June 9, 1972, Ser. No. 261,314
Int. Cl. H03f 3/26
U.S. Cl. 330—15 14 Claims

The bridge amplifier includes NPN transistors for performing all critical amplifying functions, diodes for providing quiescent bias and resistors which have non-critical values. Hence, the bridge amplifier is suitable for manufacture in monolithic form. In response to portions of the input signal of one polarity, a switch circuit of the bridge amplifier applies a given power supply potential to a first terminal of the electrical load and an analog stage connected to the second terminal

of the load controls the magnitude of the current flowing through the load to another power supply potential. In response to portions of the input signal of the other polarity, a further switch circuit applies the given power supply potential



to the second terminal of the load and a further analog stage controls the magnitude of the load current. Thus, the load current flows in opposite directions through the load under the control of portions of the input signal having different polarities.

3,768,032

ACOUSTIC SURFACE WAVE DEVICES

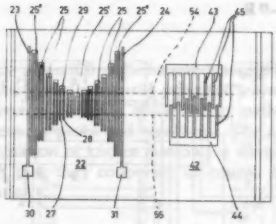
Richard Frank Mitchell, Salfords, near Redhill, England, assignor to U. S. Philips Corporation, New York, N.Y.

Filed May 19, 1972, Ser. No. 254,881

Claims priority, application Great Britain, May 24, 1971, 16,641/71

Int. Cl. H03h *9/30, 9/32*

U.S. Cl. 333—30 R 13 Claims



An acoustic surface wave device having a low capacitance transducer array comprising a pair of parallel strip terminal electrodes at each end and a plurality of electrically isolated intermediate electrodes regularly spaced between them. Each intermediate electrode is shown either as a wide strip or preferably as a pair of narrower spaced parallel strips electrically connected together. Since the piezoelectric effect is determined by the induced electrical charge, which is the same for each electrode, a form of weighting is disclosed in which the length of the electrodes varies inversely with source strength, and only that part of the acoustic surface wave beam whose width corresponds to the shortest electrode is employed.

3,768,033

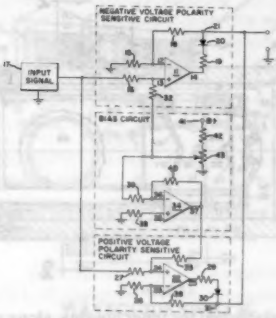
ELECTRONIC DEAD BAND DEVICE

Edward A. Lowe, Ipswich, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 17, 1972, Ser. No. 235,619

Int. Cl. H03f *3/68*

U.S. Cl. 330—84 9 Claims



An electronic dead band device, which provides for zero output in a dead band region including a negative voltage polarity sensitive circuit, and a positive voltage polarity sensitive circuit, each biased to a dead band level of opposite polarities by biasing circuitry.

ERRATUM

For Class 331—12 see:
Patent No. 3,768,030

3,768,034

GAS DISCHARGE LASER

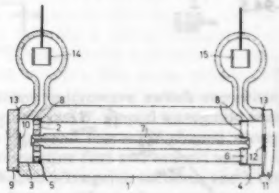
Petrus Franciscus A. Haans, and Petrus Johannes Antonius Strik, both of Emmansingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 81,275, Oct. 16, 1970, abandoned.

This application June 14, 1972, Ser. No. 262,564

Int. Cl. H01s *3/00*

U.S. Cl. 33—94.5 D 3 Claims



Instead of providing a quartz block with an aperture of small diameter, two rabbets are drilled in a wide tube in which plates are cemented which support a quartz tube of a small inner diameter. The construction is destined for a gas laser.

3,768,035

MODULAR AERODYNAMIC LASER WINDOW

Jacob L. Zar, North Andover, Mass., assignor to Avco Corporation, Cincinnati, Ohio

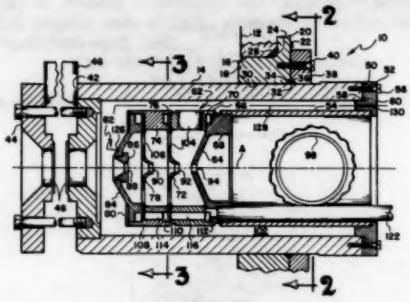
Filed Sept. 22, 1972, Ser. No. 291,215

Int. Cl. H01s *3/02*

U.S. Cl. 331—94.5 11 Claims

The aerodynamic window for a high-powered laser is constructed of an outer sleeve telescoped into an opening in line with the output laser beam generated within a laser chamber. A series of spaced water-cooled discs with central aligned

openings are supported inside the outer housing by an inner housing. The inner housing is removably connected to the end of the outer housing that is outside of the laser chamber. The outer housing is adjustably positioned relative to the opening in the laser chamber to enable the output laser beam to be focused correctly in the aligned openings in the discs. Once



this position is established the inner housing, along with the series of discs, can easily be removed as a module. The spaces between the housings and between the discs are suitably evacuated to permit maintenance of a subatmospheric pressure within the laser chamber.

3,768,036

DEVICE FOR PRODUCING STIMULATED INFRARED EMISSION, AN IRASER, HAVING A WAVELENGTH OF APPROXIMATELY 10.6U BY MEANS OF AN ELECTRIC DISCHARGE IN A GAS MIXTURE CONSISTING PARTLY OF CARBONIC ACID GAS, AND ELECTRIC DISCHARGE TUBE DESTINED FOR SUCH A DEVICE

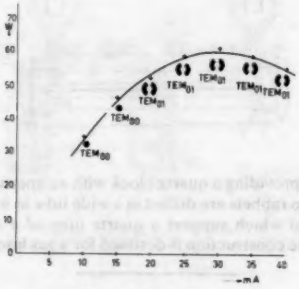
Wilhelmus Jacobus Witteman, and Hendrik Bessel Bart Van Dam both of Emmasingel, Eindhoven, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 151,957, June 10, 1971, abandoned, which is a continuation of Ser. No. 821,417, May 2, 1969, abandoned. This application Nov. 7, 1972, Ser. No. 304,394

Claims priority, application Netherlands, May 9, 1968, 6806545

Int. Cl. H01s *3/22*

U.S. Cl. 331—94.5 **3 Claims**



According to the invention, a device is provided for producing stimulated infrared emission, an iraser, having a wavelength of approximately 10.6 by means of an electric discharge having a current density exceeding 15 m^4/sq.cm in a gas mixture. The mixture consists of carbonic acid gas, nitrogen, helium and water vapour in a discharge tube of a few metres length and which includes a plane parallel plate of germanium having a thickness of approxmately 2 mm as output coupling window and also as a reflector. The discharge tube has a diameter of maximally 10 mm, the water vapour pressure is from 0.3 to 0.4 Torr and the ends of the discharge tube are connected by a narrow communication tube in which no discharge takes place.

3,768,037

SEMICONDUCTOR DIODE LASER DEVICE

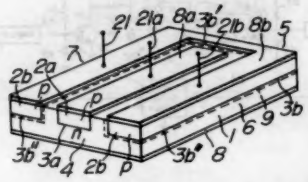
Masatoshi Migitaka, Kodaira-shi, and Katutoshi Saito, Tokyo, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 16, 1966, Ser. No. 594,933

Claims priority, application Japan, Nov. 26, 1965, 40/72218; Oct. 24, 1966, 41/69707

Int. Cl. H01s *3/10, 3/18*

U.S. Cl. 332—7.51 **8 Claims**



A semiconductor diode laser device comprising a semiconductor body having a pair of opposed reflecting surfaces which form a laser resonator, the resonator operatively emitting modulated laser beams from one of the reflection surfaces. There is provided within the laser resonator a first pn junction for generating stimulated emission light beams by supplying a forward bias voltage across said pn junction and a second pn junction spaced apart from the first pn junction in the light path of the laser beams for modulating the light by supplying a variable reverse voltage across said second pn junction.

3,768,038

SELECTABLE PULSE WIDTH MODULATOR

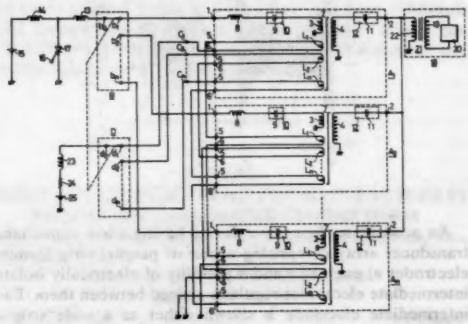
Hiroshi Anzai, and Selichi Saito, both of Tokyo, Japan, assignors to Kabushiki-Kaisha Tokyo, Keiki, Tokyo, Japan

Filed Sept. 14, 1972, Ser. No. 289,171

Claims priority, application Japan, Sept. 20, 1971, 46/85593 (utility model)

Int. Cl. H03k *7/08*

U.S. Cl. 332—9 R **4 Claims**



A selectable pulse width modulator having first, second, . . . *n*th energy storage circuits each having a saturable transformer consisting of a primary winding, a secondary winding and first, second, . . . *n*th bias windings, a low potential energy storage means connected to the primary winding of the transformer and a high potential energy storage means connected

to the secondary winding of the transformer, a first changeover circuit for selectively connecting the low potential energy storage means of the energy storage circuits to a DC power source, an elecronic switching circuit for discharging the charge stored in the low potential energy storage means of the energy storage circuits, a load connected to the high potential energy storage means of the energy storage circuits, and a second changeover circuit for connecting to a DC power source a *j*th series circuit ($j = 1, 2, \ldots n$) consisting of *j*th bias windings of the transformers of the energy storage circuits, the *j*th bias winding of the *j*th energy storage circuit in the *j*th series circuit being opposite in polarity to those of the other energy storage circuits.

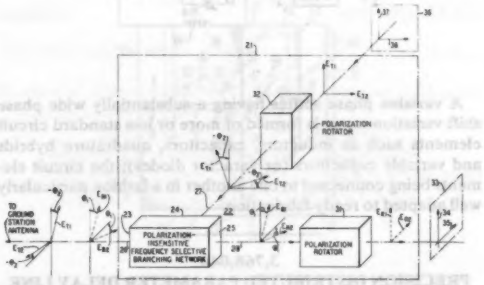
ERRATUM

For Class 333—30 see:
Patent No. 3,768,032

3,768,039
FREQUENCY SELECTIVE POLARIZATION INSENSITIVE BRANCHING NETWORK

Edward Allen Ohm, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 9, 1971, Ser. No. 179,099
Int. Cl. H01p 1/16, 5/12
U.S. Cl. 333—6 15 Claims



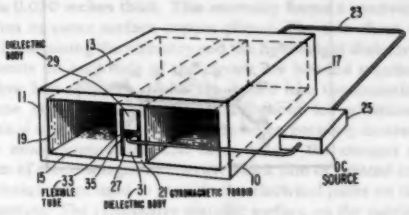
A frequency selective polarization insensitive branching network which couples arbitrarily polarized waves of different frequencies from a common wave energy path to different output wave energy paths and vice versa. The network comprises a combination of known microwave devices which are arranged such that they cooperate to couple energy in the aforesaid manner.

3,768,040
WAVEGUIDE ASSEMBLY INCLUDING A TOROID HAVING DIELECTRIC MATERIAL THEREIN

Robert Jean Mason, Medford, and Norman Richard Landry, Willingboro, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,300
Int. Cl. H01p 1/32
U.S. Cl. 333—24.1 4 Claims

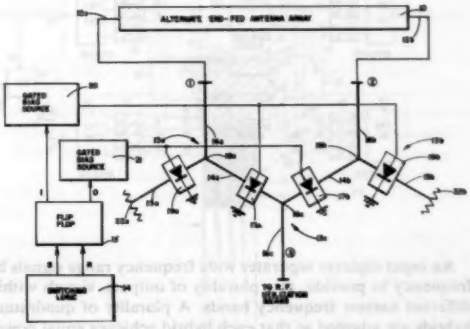
A waveguide assembly including a toroid of gyromagnetic material closely fitted within the waveguide includes first and second pieces of dielectric material dimensioned to substantially fill the void in the center of the toroid. A flexible tube having a normal diameter slightly greater than that of the spacing between the dielectric pieces is stretched, placed within the toroid between the pieces and then allowed to relax to lock the pieces in the center of the toroid.



3,768,041
WAVEGUIDE SWITCH

Robert Lincoln Carlise, Costa Mesa, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Apr. 17, 1972, Ser. No. 244,815
Int. Cl. H01p 1/10
U.S. Cl. 333—7 D 4 Claims



A double-throw microwave switch comprising three like, symmetrically-arrayed, Y-shaped waveguide sections. An arm of each of a first and second Y-shaped waveguide section comprises a respective first and second arm of a third one of the three Y-shaped waveguide sections, and a third arm of the third Y-shaped waveguide section comprises a common port. A third arm of each of the first and second waveguide sections forms a respective one of a first and second switched port. Electrically switchable impedance means interposed in the waveguide sections selectively couples an alternative one of the first and second ports in microwave circuit with the common port.

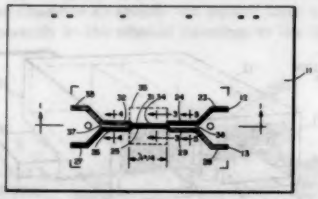
3,768,042
DIELECTRIC CAVITY STRIPLINE COUPLER

Lawrence O. Friend, Scottsdale, Ariz., and Thad Stevens, Richardson, Tex., assignors to Motorola, Inc., Franklin Park, Ill.

Filed June 7, 1072, Ser. No. 260,501
Int. Cl. H01p 5/14, 3/08
U.S. Cl. 333—10 5 Claims

A three section stripline coupler is disclosed wherein the conducting strips of the center section overlie each other and

those of the end sections are displaced sideways relative to each other. Cavities are formed in the ground planes of the



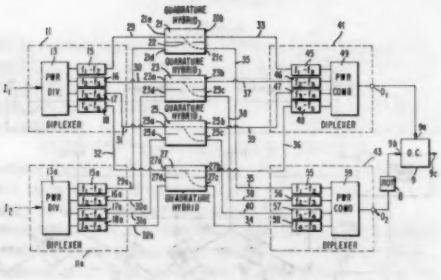
stripline over the center section and the cavities are filled with dielectric material to increase the coupling between the conducting strips at the center section.

3,768,043

WIDEBAND HYBRID SYSTEM

Peter Foldes, Montreal, Canada, assignor to RCA Corporation, New York, N.Y.

Filed Jan. 5, 1973, Ser. No. 321,469
Int. Cl. H01p 1/16, 1/18, 5/12
U.S. Cl. 333—6 **5 Claims**



An input diplexer separates wide frequency range signals by frequency to provide, at a plurality of outputs, signals within different narrow frequency bands. A plurality of quadrature hybrids are adapted so that each hybrid achieves equal power division and 90° relative phase shift with low distortion over one of the narrow frequency bands. A hybrid is coupled to each output of the input diplexer. Output diplexers are coupled to the two outputs of each of the hybrids to combine the power divided narrow frequency band signals into two wide frequency band signals of substantially equal power and of 90° differential phase.

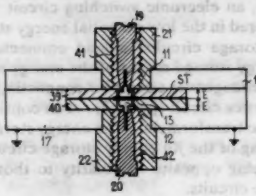
3,768,044

PASSIVE LIMITER FOR HIGH-FREQUENCY WAVES

Raymond Henry; Gilles Sillard, and Pierre Blanchard, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 3, 1972, Ser. No. 240,743
Claims priority, application France, Apr. 9, 1971, 7112746
Int. Cl. H01p 1/22; H04b 3/04
U.S. Cl. 333—17 **7 Claims**

A passive limiter, designed to block transmission of high-amplitude pulses over a signal path such as a duplexing channel of a radar transceiver, comprises two or more pairs of diodes connected in antiparallel relationship between ground and a common point on the transmission channel. Each diode consists of three semiconductor layers, i.e. two heavily doped outer layers N^+, P^+ and a lightly doped intermediate layer N or P. Each diode is enclosed in a thermally conductive housing with two spaced-apart end walls receiving the semiconductive wafer therebetween, the wafer resting on one end wall and



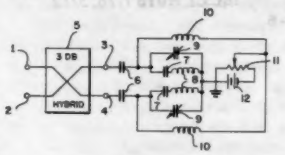
being tied to the opposite end wall by one or more leads leaving a large void inside a dielectric shell of, for example, beryllium oxide.

3,768,045

WIDE RANGE VARIABLE PHASE SHIFTER

Sun Ho Chung, Seoul, South Korea, assignor to Korea Institute of Science & Technology, Seoul, South Korea

Filed Oct. 5, 1971, Ser. No. 186,288
Int. Cl. H01p 1/18
U.S. Cl. 333—31 R **14 Claims**



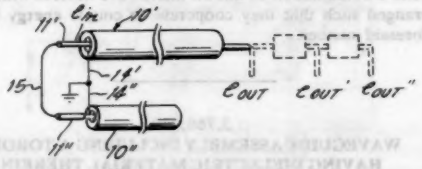
A variable phase shifter having a substantially wide phase shift variation range is formed of more or less standard circuit elements such as inductors, capacitors, quadrature hybrids and variable capacitors (or varactor diodes), the circuit elements being connected to one another in a fashion particularly well adapted to ready fabrication.

3,768,046

PRECISION DISTRIBUTED PARAMETER DELAY LINE

Harold Lorber, 3225 Burn Brae Dr., Dresher, Pa., and Irving Duboff, 1513 Woodland Rd., West Chester, Pa.

Filed May 12, 1972, Ser. No. 252,617
Int. Cl. H03h 7/30; H01p 3/08
U.S. Cl. 333—31 R **16 Claims**



A precision distributed parameter delay line for use in high speed circuitry requiring very precise nanosecond delay intervals. The delay line, in one preferred embodiment, comprises a section of coaxial cable transmission line having a central conductor and a coaxially aligned conductive sheath with the sheath preferably being insulated over its length. The section of coaxial cable tranmission line functions as a low impedance delay element of extremely small outer diameter whose length may be adjusted to provide delays of from tenths to hundreds

of nanoseconds. The nature and size of the delay line is such as to make it extremely adaptable to being coiled so as to significantly reduce the amount of space which it occupies. A very short section of coaxial cable transmission line of similar design and impedance characteristics is coupled to the input and/or output ends of the coaxial cable transmission line section central conductor to improve the rise time and provide an extremely high delay to rise time ratio, low insertion loss, low characteristic impedance and is adaptable for use over a wide frequency bandwidth.

The delay line may also take the form of a printed circuit of the microstrip type transmission line comprised of an elongated, preferably undulating conductive strip separated from a conductive ground plane by a suitable dielectric with input and output terminals being located a spaced distance from the extremities of the undulating conductive member to provide the characteristics set forth hereinabove while taking advantage of microconductor techniques to further reduce the size and allow dual-in-line delay line packages. Both of the above embodiments may be modified accordingly to provide a tapped delay line having the desirable characteristics set forth herein.

3,768,047

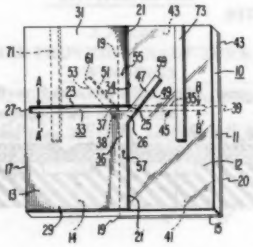
LATTICE NETWORK USING DISTRIBUTED IMPEDANCE TRANSMISSION LINES

Thomas Herbert Campbell, Flemington; Paul Schnitzler, Kendall Park, both of N.J., and Laurice Juston West, Levittown, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 9, 1971, Ser. No. 206,421

Int. Cl. H01p 1/20

U.S. Cl. 333—73 S **9 Claims**



A lattice network operable at microwave frequencies is described. Each of the two series arm impedances is formed by a staggered parallel transmission line stub. The cross arm impedances are formed by microstrip transmission line stubs.

3,768,048

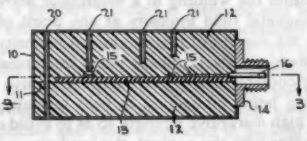
SUPER LIGHTWEIGHT MICROWAVE CIRCUITS

Howard S. Jones, Jr., Washington, D.C., and Richard J. Norris, Falls Church, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 22, 1971, Ser. No. 210,634

Int. Cl. H01p 1/16, 3/08

U.S. Cl. 333—84 M **1 Claim**



An extremely lightweight microwave circuit comprising stripline printed circuitry which is highly efficient, inexpensive, and suitable for use in electronics systems for space and military applications. The microwave circuit is formed by printing on a very thin substrate such as Mylar or alumina approximately 0.005 inches thick. The circuit is assembled between two thin sheets of a foam material approximately 0.040 to 0.050 inches thick. This assembly forms a sandwich which has its outer surface copper-plated. The thin sheet of material containing the circuitry and the lightweight dielectric foam sheets on each side of the circuit are bonded together with a low loss adhesive. Holes are drilled into the assembly and these holes are also plated throughout for additional mechanical support. In addition, these holes, properly located, provide mode suppression and thus, reduce the amount of radiation of electromagnetic energy. Thick film or printed circuit techniques are used to provide the electrical paths on the thin substrate. The conductive metallic surface on the outside of the sandwich is appositioned by the use of electroless copper-plating techniques. The connectors for the electrical paths of the circuit are secured to the assembly by means of a conductive epoxy or adhesive.

3,768,049

HELICAL WAVEGUIDE

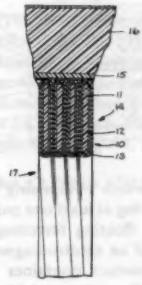
Paolo Gazzana Priaroggia, Milan, and Antonio Portinari, Sesto San Giovanni, both of Italy, assignors to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed May 8, 1972, Ser. No. 251,321

Claims priority, application Italy, May 19, 1971, 24709 A/71

Int. Cl. H01p 3/12, 3/14

U.S. Cl. 333—95 R **10 Claims**



A waveguide having an internal wall formed by a helix of one or more insulated straps, each strap having a core of a material having a specific weight less than 2 covered by a layer of metal of high conductivity, the thickness of the layer being 3–4 times the reference depth at the frequency of the waves transmitted, a layer of tape over the helix and a sheath of thermoplastic surrounding the tape layer.

3,768,050

MICROWAVE INTEGRATED CIRCUIT

Charles Wesley Stiles, Jr., Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

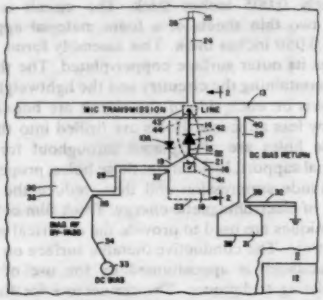
Filed May 19, 1971, Ser. No. 144,746

Int. Cl. H01p 3/08, 5/12, 1/10

U.S. Cl. 333—97 S **14 Claims**

A hybrid microwave integrated circuit mounting and tuning technique is disclosed whereby electrically shunt mounted unpackaged diode chips, or other semiconductor chips, may be mounted on top of the substrate on which the microstrip trans-

mission line is formed and the components for eliminating, by resonance, the capacitances and parasitic inductances of the



semiconductor chips and leads, and supplying any desired DC bias, likewise, are mounted on top of the substrate.

ERRATUM

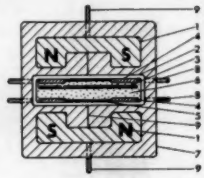
For Class 334—1 see:
Patent No. 3,767,112

3,768,051

MAGNETO-MOTIVE BISTABLE SWITCHING DEVICES

Waldemar Helmut Kurpanek, Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 149,174, June 2, 1971, abandoned. This application July 21, 1972, Ser. No. 273,940
Int. Cl. H01h 51/24, 51/27
U.S. Cl. 335—153 12 Claims



A bistable relay switch comprising a hermetically sealed contact container having at least one pair of stationary contact points and one free floating ferromagnetic contactor. The contact container and an electromagnetic coil encircling the midsection of the contact container are mounted rigidly, within the magnetic flux of two rigidly mounted permanent magnets that face each other at a given distance with reciprocal poles thus forming a fully closed ring flux field that cannot be demagnetized under given operating conditions. The switch is electrically tripped by a dc trigger pulse energizing the coil. The coil and the contact points may have individual electric circuits thus permitting the switching of relative high dc or ac electrical currents across the contact points with a low voltage dc pulse. By connecting the coil and contact points in series the switch also functions as a sensitive dc overload circuit breaker.

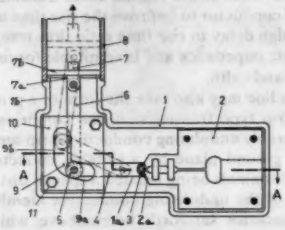
3,768,052

RELEASE DEVICE FOR ELECTRICAL SWITCHES

Karl Buhler, Nussbaumen, and Dieter Floessel, Fislisbach, both of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Apr. 4, 1972, Ser. No. 240,950
Claims priority, application Switzerland, Apr. 26, 1971, 6060/71
Int. Cl. H01h 3/42
U.S. Cl. 335—190 4 Claims

A device for initiating release of the contacts of an electrical switch includes an actuating rod which is tensioned in the upward, release direction, but which is retained in a downward position, until released, by means of a cylindric roll operating in an angular slot and which is maintained in a state of unstable equilibrium by the magnetic attractive force of a hold-



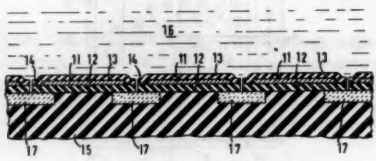
release magnet. The angular slot and cylindric roll mechanism is so designed that when the release device is in its "hold" position, a releatively high tensional force exerted on the actuating rod tending to pull it upward is counter-balanced by a much smaller magnetic force.

3,768,053

SUPERCONDUCTIVE SWITCHING PATH FOR HEAVY CURRENT

Ernst Massar, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 31, 1972, Ser. No. 276,305
Int. Cl. H01f 7/22
U.S. Cl. 335—216 8 Claims

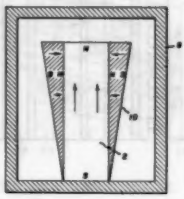


A switching path for heavy current includes at least one superconductive winding traversible by a current and switchable from superconductive to electrically normally conductive condition through its intrinsic magnetic field, and magnetic shield means of superconducting material disposed in the vicinity of the winding and positioned in a manner that when the shield means are in superconductive condition, the magnetic lines of force produced by the winding during the passage of current therethrough are forced into a longer path (s_1) than without the shield means so that the magnetic field within the winding is smaller than the lowest critical field intensity at any point of the winding, and so that when the current in the winding reaches a predetermined intensity (I_o) the shielding effect of the shield means disappears at least partially due to the increased magnetic field whereby the magnetic lines of force are shortened and the magnetic field increases within the winding to a magnitude above the highest critical magnetic field intensity at any point of the winding passed by the current of predetermined intensity, the winding and the magnetic shield means being immersed in a coolant and being coolable thereby to superconductive temperature, the winding being embedded in heat insulating material of relatively high disruptive strength so as to avoid direct contact of the winding with the coolant, the insulating material having a thickness at least on a side thereof facing the coolant which affords recooling of the winding to superconductive condition subsequent to actuation of the switching path.

3,768,054
LOW FLUX LEAKAGE MAGNET CONSTRUCTION

Wendell Neugebauer, Ballston Spa, N.Y., assignor to General Electric Company, Owensboro, Ky.

Filed Apr. 3, 1972, Ser. No. 240,350
Int. Cl. H01f 7/02
U.S. Cl. 335—304 15 Claims

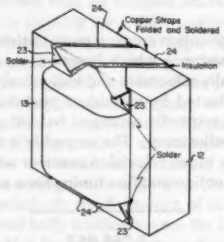


A magnet construction is disclosed wherein the flux of a first, principal magnet is conserved by placing a second magnet adjacent the first magnet with the magnetic axes of the two magnets perpendicular to each other. The second magnet is constructed of a highly anisotropic material having low permeability perpendicular to its magnetic axis and preferably having a high coercive force and good magnetization retention. Preferably the second magnet surrounds the first magnet to minimize the flux leakage of the first magnet.

3,768,055
TRANSFORMER PROVIDING HALF-TURN SECONDARY WINDINGS

Bernard M. Oliver, Los Altos Hills, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed June 23, 1972, Ser. No. 265,952
Int. Cl. H01f 27/28
U.S. Cl. 336—73 5 Claims

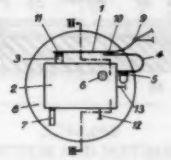


A transformer is provided with a closed core having a center leg on which a primary winding is disposed and having two outer legs on which one or more secondary windings having an integer number of half turns are disposed. To insure flux equality in the two outer legs, balancing windings may be disposed on the outer legs or, alternatively, the secondary windings having the integer number of half turns may be wound in duplicate and cross-connected in parallel so that an extra half turn of one of these secondary windings passes between the center leg and one of the outer legs and an extra half turn of another of these secondary windings passes between the center leg and the other of the outer legs.

3,768,056
ELECTRO-THERMIC STARTER FOR IGNITING FLUORESCENT LAMPS

Pierre C. Egurbide, Rueil-Malmaison, France, assignor to "-Constructions Electrotechniques du Centre" CETEK, Blanzat, France

Filed Apr. 21, 1972, Ser. No. 246,279
Claims priority, application France, June 4, 1971, 7120358
Int. Cl. H01h 61/100
U.S. Cl. 337—23 13 Claims

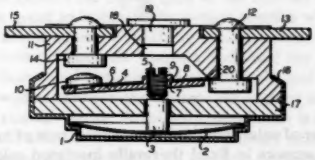


A starter switch for a fluorescent lamp including a microswitch actuated by an electrically heated bi-metallic expansion element. A second bi-metallic element is provided to compensate for changes in ambient temperature, thus rendering the initial switch adjustments independent of surrounding temperature changes. The elements are selected to provide a desired filament heating delay for the lamp prior to ignition switching, and to recycle after a predetermined time in the event of non-ignition.

3,768,057
THERMAL SWITCH WITH SMALL SWITCHING TEMPERATURE DIFFERENCE

Peter Sekira, and Helmut Bayer, both of Vienna, Austria, assignors to Electrovac Fabrikation elektrotechnischer Spezialartikel Gesellschaft m.b.H., Wien, Austria

Filed June 21, 1971, Ser. No. 155,175
Claims priority, application Austria, June 19, 1970, 5535; July 31, 1970, 7005
Int. Cl. H01h 37/52
U.S. Cl. 337—349 9 Claims



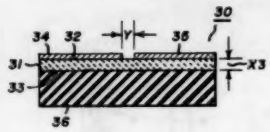
A thermal switch with a thermo-bimetal-snap disc having in its free state a large transfer temperature difference as a temperature sensor, the snap stroke of which is limited by at least one abutment for provision of small switching temperature differences, which comprises a spring-biased contact carrier, and a transmission member. The thermo-bimetal-snap disc is in operative connection with the contact carrier by means of the transmission member. An adjusting screw for adjusting of the contact distance is provided as well as an immovable contact. The contact carrier comprises a rigid pivotal one-armed lever, and the adjusting screw is adjustingly secured to the lever and is in engagement at its end-side with the transmission member.

3,768,058

METAL OXIDE VARISTOR WITH LATERALLY SPACED ELECTRODES

John D. Harnden, Jr., Schenectady, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed July 22, 1971, Ser. No. 165,001
Int. Cl. H01c 7/10
U.S. Cl. 338—20 13 Claims



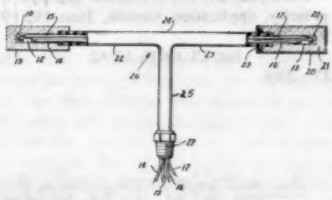
A metal oxide varistor having an alpha in excess of 10 in the current density range of from 10^{-3} to 10^{2} amperes per square centimeter is formed with laterally spaced electrodes adjacent a first surface. A spaced third electrode may be associated with the first surface or a second surface. To improve the current carrying capacity of the varistor body the conduction gap between the electrodes may extend along the first surface an extended distance greater than the width of the surface. The conduction gap width may be varied continuously or in discrete steps.

3,768,059

AMBIENT COMPENSATED SOLAR SENSOR

Donald W. Day, Harlem, Winnebago County, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed May 15, 1972, Ser. No. 253,413
Int. Cl. H01c 7/00
U.S. Cl. 338—25 9 Claims



A sensor of solar radiation comprises a pair of matched temperature sensors in fixed thermally insulated relation one to another, one of the pair being exposed to solar radiation and the other shielded from solar radiation.

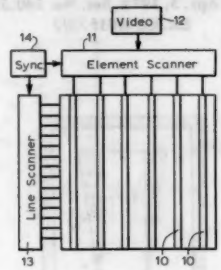
3,768,060

THRESHOLD SWITCH AND NOVEL MATERIAL THEREFOR

Alan Sobel, Evanston, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Apr. 10, 1972, Ser. No. 242,546
Int. Cl. H01c 7/16
U.S. Cl. 338—32 R 11 Claims

To form a powder that exhibits a change in electric conductivity in response to an applied field, a plurality of minute particles of conductive material are each coated with an amorphous semiconducting material. As used in a threshold switch system, the powder is sandwiched between a plurality of electrodes. The electrodes are continuous or distributed, depending upon the species. Distributed electrodes also find utility with continuous layers of such amorphous semiconducting material. Advantageously, such switches are used in image display panels.

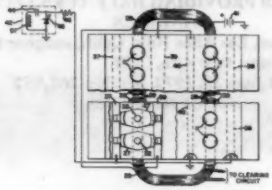


3,768,061

PUSH-BUTTON SWITCH ASSEMBLY WITH INTEGRAL RESISTANCE FOR ELECTRONIC TUNING

William Peil, North Syracuse; Peter R. Daino, Syracuse; Roland M. Marion, LaFayette, and Brian J. Watkins, Liverpool, all of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed Oct. 22, 1971, Ser. No. 191,925
Int. Cl. H01c 5/00
U.S. Cl. 338—125 10 Claims



The present invention treats a push-button switch assembly with integral resistance which functions as a voltage divider having individually selectable and individually adjustable taps. The taps are selected by individual push-buttons. Individual adjusting knobs normally arranged behind each push-button provide for tap adjustment. The assembly is suitable for use in an electronically tuned television receiver wherein it provides both channel selection and fine tuning for a selected channel.

3,768,062

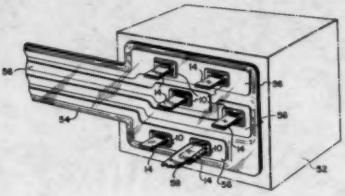
TERMINAL FOR FLEXIBLE CIRCUITS

Leonard H. Michaels, Naperville, Ill., assignor to Molex Incorporated, Downers Grove, Ill.

Filed Sept. 28, 1971, Ser. No. 184,361
Int. Cl. H01r 15/12; H05k 1/10
U.S. Cl. 339—17 C 9 Claims

A terminal for attachment to a flexible circuit, or flexible cable, serves releasably to receive a projecting male terminal in order to establish an electrical connection between the male terminal and the flexible circuit. The novel female terminal is formed as a unitary body of conductive metal having a generally planar portion together with a plurality of pointed tangs extending from the body. The tangs are adapted to be forced through the flexible circuit and then crimped against the circuit so that the terminal is attached to the circuit with a "stapling" action. The planar portion of the body is provided

with a compact, effective contact structure including a series of slots defining two spaced generally parallel arms each of which is integral at both of its ends with the body. A pair of interfacing contact segments on the two arms are spaced apart from one another a distance such that the projecting male ter-



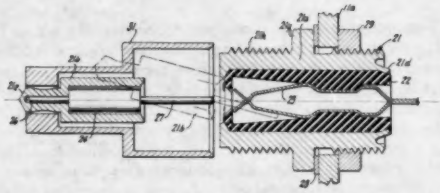
minal is received with an interference fit. Upon insertion of the male terminal, cantilever movement of the contact segments and torsional stress in the contact arms produce firm contact between the contact segments and the projecting male terminal.

3,768,063

COAXIAL CONNECTOR WITH AN INTEGRAL BREAKOFF TERMINATING RESISTOR

Rudleigh G. Coffman, 769 Bay Tree Lane, El Cerrito, Calif.

Filed Aug. 16, 1972, Ser. No. 280,969
Int. Cl. H01r *13/20*
U.S. Cl. 339—31 R 7 Claims



A coaxial connector with an integral breakoff terminating resistor is especially suitable for CATV systems in which the coaxial connector includes a body having a first portion containing a contact spring and a second portion in which a terminating resistor is disposed. An interface portion between the first and second body portions is formed of material having a thickness substantially less than the thickness of material used in either of the body portions mentioned above. When it is desired to remove the terminating resistor as, for example, when connecting a subscriber's coaxial cable drop line to a CATV system, a relatively small amount of mechanical force applied to the second body portion causes the interface to rupture or fracture so that the second body portion along with the terminating resistor is readily removed, thus exposing the center conductor contact spring and a threaded area on the first body portion for mating with a companion connector that is attached to the subscriber's coaxial drop cable.

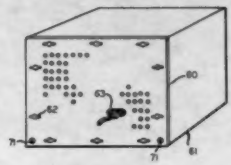
3,768,064

SAFETY BACK FOR CABINETS

Richard W. Pabich, c/o Acme Lane Co., Inc., 4904 W. Fullerton Ave., Chicago, Ill.

Continuation-in-part of Ser. No. 110,829, Jan. 29, 1971. This application Nov. 22, 1971, Ser. No. 201,072
Int. Cl. H01r *13/44*
U.S. Cl. 339—36 13 Claims

A safety back for an appliance cabinet (such as a TV cabinet) cannot be opened without following a procedure involving several steps in predetermined sequence and, in some cases, without having a special tool. The object is to provide a



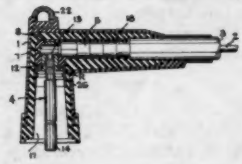
cabinet back which cannot be removed by small children or incompetent persons who might be injured by electrical shock if they put their hands inside the cabinet.

3,768,065

ELECTRIC CONNECTOR AND METHOD OF FORMING A CONNECTION

Carl G. Zemels, Lilburn, Ga., assignor to Kearny National Inc., Atlanta, Ga.

Filed Sept. 9, 1971, Ser. No. 179,100
Int. Cl. H01r *7/12*
U.S. Cl. 339—59 R 4 Claims



An electric elbow connector includes a generally L-shaped hollow enclosing structure having a generally L-shaped conducting structure mounted therein and formed of three pieces including a contact body having formed therein a pair of angularly related contact making passages in one of which the shank end of a contact sleeve is disposed and in the other of which a contact pin is threadedly mounted in such manner that the end thereof is disposed in high pressure contact with the side of the shank of the contact sleeve. The pressure applied to the shank of the contact sleeve by the contact pin is insufficient to exceed the elastic limit of the contact body but is sufficiently great to impart deformation thereto whereby a springlike action is achieved resulting in substantially constant contact pressure between the contact body and the shank of the contact sleeve and between the contact pin and the contact body as well as between the contact pin and the side of the shank of the contact sleeve. An electric conductor is interconnected with the contact sleeve in known manner and the contact pin engages the terminal of an electric device such as a power transformer or the like.

3,768,066

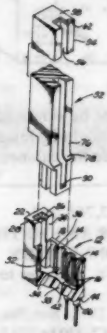
PRINTED CIRCUIT BOARD CONNECTOR CARD GUIDE

William R. Mattingly, Jr., Santa Ana, and David S. Goodman, Orange, both of Calif., assignors to International Telephone and Telegraph Corporation, New york, N.Y.

Filed Jan. 3, 1972, Ser. No. 215,054
Int. Cl. H01r *13/20*
U.S. Cl. 339—65 5 Claims

A printed circuit board connector having a central channel and a plurality of pairs of opposed cavities on opposite sides of the channel. A printed circuit board card guide is insertable in the cavities and comprises an elongated member having a slot extending from one end of the guide. The thickness of the slot is approximately equal to the thickness of a printed circuit

board which is inserted therein. Side bar members are formed at the other end of the card guide and the side bar members are insertable in the cavities of the printed circuit board connector. The card guides are insertable on both ends of the



printed circuit board connector and may contain a pair of side bar members for insertion in a pair of adjacent longitudinal cavities. The cavities are normally the same cavities into which electrical contacts are inserted.

3,768,067

CONNECTOR FOR INSULATED FLAT CABLE

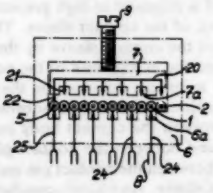
Patrick Rault, Ballaison, France, assignor to Sodeco Societe des Compteurs de Geneve S.A., Geneva, Switzerland

Filed June 9, 1972, Ser. No. 261,159

Claims priority, application Switzerland, June 11, 1971, 8507/71

Int. Cl. H01r *9/08*

U.S. Cl. 339—99 R **7 Claims**



A connector for flat cable including parallel spaced apart elongate conductors in a dielectric sheath comprises a body including two relatively movable parts defining therebetween a channel adapted to receive the flat cable. The parts include sets of spaced apart parallel grooves and ribs, the ribs of one part facing the grooves of the other and vice versa, with conducting teeth disposed in the grooves of both parts and one additional conducting tooth protruding from a rib. The teeth of one part are electrically interconnected and those of the other part are individually connected to output contacts. When the parts are brought together, the teeth penetrate the sheath of the cable and contact respective conductors, one set of alternate conductors being connected together and to one grounding contact and the other alternate conductors being individually connected to respective contacts.

3,768,068

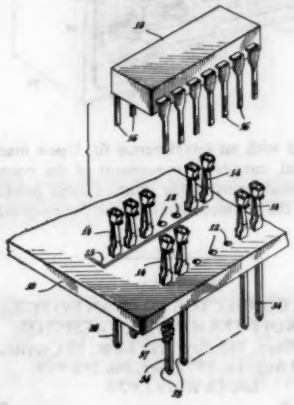
ONE PIECE FREE STANDING TERMINAL

Vincent James Palecek, Cicero, Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Feb. 4, 1972, Ser. No. 223,472

Int. Cl. H01r *13/42, 13/12*

U.S. Cl. 339—221 M **19 Claims**



The invention relates to a one-piece free standing terminal adapted for use with a circuit board having a terminal receiving opening formed therein. The terminal consists of a contact portion having a single pair of bows bent to form a lead receiving funnel terminating in a contact throat, a seating flange, a resilient neck connecting the contact portion to the seating flange, a terminal retention area and a tail extending from the terminal retention area and adapted to have a conductor connected thereto. The terminal retention area is shaped to coact with the terminal receiving opening in the board to frictionally retain the terminal in the board. In order to permit the terminal to be withdrawn and reinserted in the board the terminal retention area may have a non-symmetric cross-section or a fixture may be provided to permit at least one dimension of the terminal retention area to be expanded in the field. The terminal may be constructed from two like blanks bent into an overlaying relationship with each other or it may be formed from dual thickness material.

3,768,069

ENCASED GRADIENT HYDROPHONE ASSEMBLY

Louis A. Abbagnaro, Huntington, Conn., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

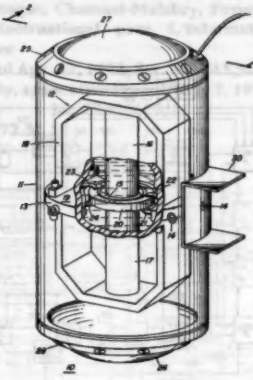
Filed Jan. 17, 1972, Ser. No. 218,382

Int. Cl. H04b *13/00*

U.S. Cl. 340—8 R **10 Claims**

An encased gradient hydrophone assembly that is particularly suitable for operation when rigidly mounted underwater. A fluid-tight cylindrical casing having openings at its opposite ends is provided. A gradient-type hydrophone is positioned within the casing, the hydrophone including a magnetic field generating means and a movable coil. Means are provided for rigidly mounting the field generating means with respect to the casing, and for resiliently mounting the coil with respect to the casing. First and second flexible diaphragms form fluid-tight enclosures at opposite ends of the casing and a non-corrosive fluid fills the enclosed casing. In a preferred embodiment of

the invention impedance plates with apertures of controlled size are rigidly mounted radially across opposite ends of the



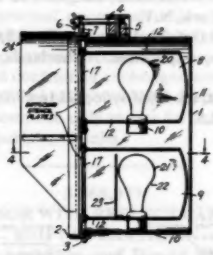
casing. The plates are a convenient means of providing controlled acoustic impedance and obtaining non-symmetrical hydrophone receiving patterns.

3,768,070

TWO COLOR PEDESTRIAN TRAFFIC SIGNAL WITH MEANS FOR IMPROVING COLOR RENDITION

Lawrence Lawton, Peters Lane Bedford Village, Westchester, N.Y.

Filed Mar. 23, 1972, Ser. No. 237,303
Int. Cl. G08g *1/00*
U.S. Cl. 340—44 **9 Claims**



This invention provides a two color pedestrian traffic signal comprising a housing, an upper and lower reflector unit within said housing, at least one light bulb of a first color within the upper reflector unit, at least one light bulb of said first color and also at least one light bulb of a second color within the lower reflector unit, means to energize the light bulbs of the first color during one time interval, means to energize the light bulb of the second color during another time interval and a diffusing stencil in front of each reflector which is selectively illuminated, wherein the improvement comprises light flux barrier means, in the lower reflector, which is located between the light bulb of the first color and the lower stencil.

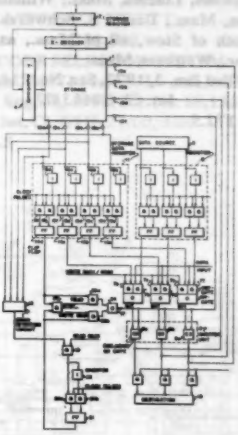
3,768,071

COMPENSATION FOR DEFECTIVE STORAGE POSITIONS

Guenter Knault, Boeblingen; Fritz Koederitz, Gechingen; Petar Skuin, Magstadt, and Edwin Vogt, Boeblingen, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 24, 1972, Ser. No. 219,929
Int. Cl. G11c *29/00*
U.S. Cl. 340—146.1 BA **4 Claims**

In order to save in a storage the storage elements for the redundancy bits which are required when using an error correction code, the following method is employed. Apart from the storage elements for the data bits and the appertaining parity bit, only one additional storage element is provided per storage location. For error detection, a word to be stored is read immediately after having been stored. If an error is detected, the word to be stored is inverted, marked as an inverted word in the additional storage element and stored in



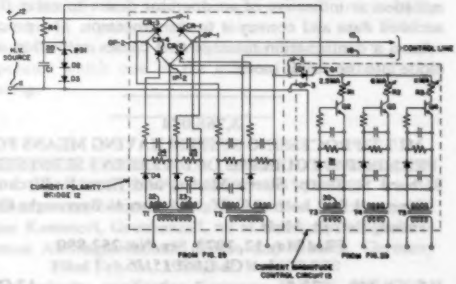
this form. When the word is read later on, it is again inverted by virtue of the marking in the additional storage element to retrieve the original correct information supplied. If not more than one storage element is defective per storage location, error detection is carried out by means of a simple parity check. In the case of several defective storage elements the word to be stored is compared with the word read.

3,768,072

REMOTE CONTROL CIRCUIT UTILIZING DIRECT CURRENT OF SELECTED MAGNITUDE AND POLARITY

Thomas W. Gaddy, Florence, S.C., assignor to General Electric Company, Lynchburg, Va.

Filed Mar. 26, 1973, Ser. No. 344,574
Int. Cl. H04q *1/00*
U.S. Cl. 340—147 PC **6 Claims**



Direct current control of remote electrical apparatus is provided with a current polarity bridge that has a controlled rectifier connected between each adjacent pair of input and output terminals of the bridge. The bridge input terminals are connected through a current magnitude control circuit to a source of direct current, and the bridge output terminals are connected to a remote control line connected to the remote apparatus. The polarity of the direct current supplied to the

remote control line is controlled by causing one pair of controlled rectifiers to conduct, and the magnitude of direct current supplied to the remote control line is controlled by selecting one of several resistance paths in the current magnitude control circuit.

3,768,073

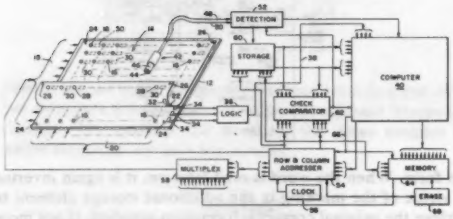
ENTRY CONFIRMING INPUT TERMINAL

Edward B. Rawson, Lincoln, Mass.; William J. Murphy, Jr., Framingham, Mass.; Daniel B. Schwarzkopf, and John B. Dowling, both of Stow, all of Mass., assignors to Searle Medidata Inc., Waltham, Mass.

Filed Jan. 3, 1972, Ser. No. 214,885

Int. Cl. G06f *3/02*

U.S. Cl. 340—172.5 **16 Claims**



An input terminal to provide data to a data processor and having a display providing instantaneous confirmation of receipt of correct data by the processor. The terminal has a two-dimensional array of selectively illuminated light emitting diodes, each associated with different data words provided by one of a plurality of overlays. Each diode in the array is activated in two modes, one providing substantially imperceptible, low level illumination and the other providing visible illumination. A light pen is provided to detect the low level illumination as indicative of an operator desire to enter the associated data and convey it to the processor. The processor returns a confirmation message that causes activation of the diode into the visible mode.

3,768,074

MULTIPROCESSING SYSTEM HAVING MEANS FOR PERMISSIVE COUPLING OF DIFFERENT SUBSYSTEMS

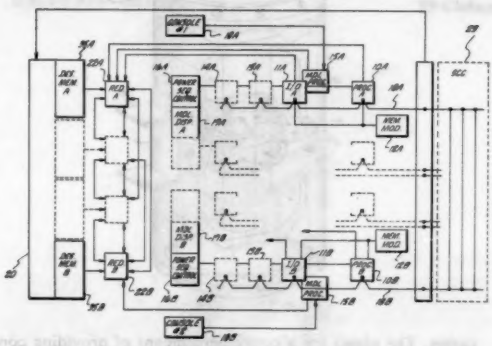
Richard S. Sharp, Sierra Madre, and Hans P. Birchmeier, Diamond Bar, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 12, 1972, Ser. No. 252,890

Int. Cl. G06f *15/16*

U.S. Cl. 340—172.5 **12 Claims**

This disclosure relates to a multiprocessing system including two or more processing units, I/O control units and so forth which are arranged in independent processing groups. Each of the processing groups is provided with a representative means to receive a system configuration code which specifies the particular subsystem to which that processing group is to be joined. The representative means transmits its code to the corresponding representative means of the other processing groups and receives codes of the other processing groups in return. Processing groups having the same code are then interconnected as a subsystem. If a processing group is not available, it does not transmit its code to the other processing groups



and thus is not recognized by the other processing groups. In this manner, the respective subsystems are permissively formed of only those active processing groups which are available.

3,768,075

EXTENSIBLE MICROPROGRAM STORE

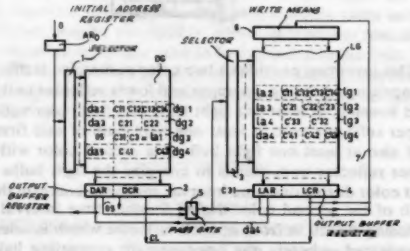
Jagchum Reitsma, and Johannes Reinier Maria Sanders, both of Beekbergen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 22, 1970, Ser. No. 83,015

Claims priority, application Netherlands, Oct. 25, 1969, 6916125

Int. Cl. G06f *9/06*; G11c *17/00*

U.S. Cl. 340—172.5 **7 Claims**

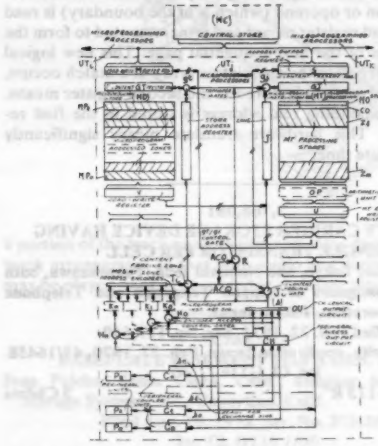


An extensible microprogramme store comprising an electrically invariable read only store (dead store) which can be extended by at least part of a destructive read store (living store) suitable for storing microprogramme words, the electrically invariable read store comprising microprogramme words containing a number of bits or group of bits (command lines) by which the microprogramme words contained in the living store can be selected and read from said living store. An ordering loop is provided between the "dead" and "living" stores, whereby a microprogramme word in the living store references a dead store address so that a new dead store-living store cycle can commence.

3,768,076
MULTIPLE PERIPHERAL COUPLED DATA PROCESSOR SYSTEM

Alice Maria Recoque, Chatenet-Malabry, France, assignor to Compagnie International pour L'Informatique, Louveciennes, France

Filed Apr. 12, 1972, Ser. No. 243,301
Claims priority, application France, May 7, 1971, 7116498
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 7 Claims

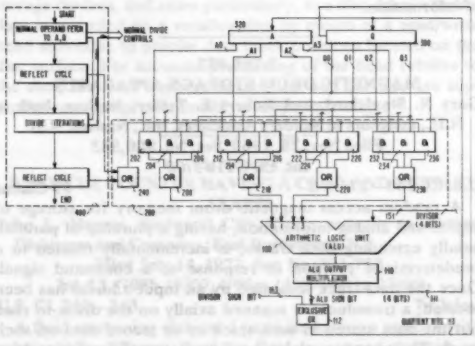


A digital data processor which receives instruction and operand words from an external store, operates on such words by execution of internal micro-instruction programmes and communicates with a plurality of peripheral units through a multi-coupling arrangement, comprises means executing the specific operations controlling exchanges between the processor and the peripheral units and the coupling units of the peripheral units comprise only means for the local control of operation of said peripheral units.

3,768,077
DATA PROCESSOR WITH REFLECT CAPABILITY FOR SHIFT OPERATIONS

Richard E. Nier, Apalachin, and Donald E. Waldecker, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 24, 1972, Ser. No. 246,795
Int. Cl. G06f 7/39
U.S. Cl. 340—172.5 5 Claims

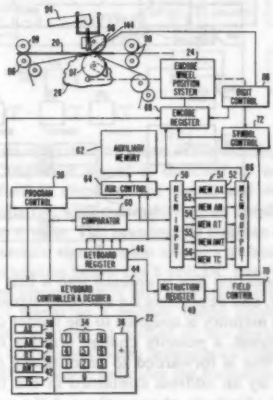


A data processor is described in which general purpose registers having a unidirectional shift capability are employed in conjunction with a reflect operation to effectively execute multiply or divide operations. The outputs of a register having unidirectional shift capability are presented to one set of inputs on an input multiplexor of an arithmetic logic unit (ALU) in normal bit order for operations requiring no shift or a right shift. They are also presented to a second set of inputs on the input multiplexor of the ALU in bit reversed order to provide a reflect capability in data flow from the register, through the ALU, and back to the input of the register.

3,768,078
ENCODE SELECTOR SYSTEM

Richard M. Williams, 36571 Marler, Livonia, Mich.

Filed Aug. 31, 1970, Ser. No. 68,135
Int. Cl. G11b 27/00, 3/00
U.S. Cl. 340—172.5 10 Claims



An operator selectable encode program system for encoding any combination of a plurality of data fields on a given document. In the preferred emboidment, there is shown a system for selecting the fields to be encoded from a bank of five operator activated selectors. Means is also provided for storing in an auxiliary memory, data which is commonly used and thereby relieving the operator of the necessity of keying such data into the system. The input to the system is a keyboard which is selectably used as a data entering device and also as a memory addressing device. The fields to be encoded are initially selected by the operator and processed by the encoder in a predetermined sequence. As each field is presented for data entry, an indicator is illuminated to notify the operator which one of the selected fields is ready for processing.

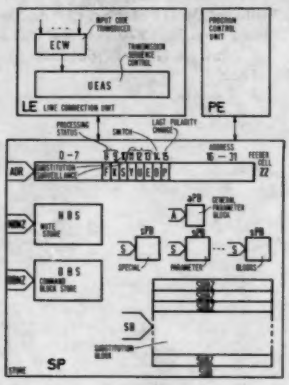
3,768,079
METHOD FOR CONNECTION CONTROL IN PROGRAM CONTROLLED PROCESSING SYSTEMS

Hans Bittermann, Munich; Albin Hausenblas, Starnberg, and Anton Kammerl, Groebenzell, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 24, 1972, Ser. No. 229,078
Claims priority, application Germany, Feb. 26, 1971, P 21 09 318.5
Int. Cl. G06f 9/16, 3/00
U.S. Cl. 340—172.5 9 Claims

A method of operation for program controlled, computer operated telecommunication exchange systems is described. Each exchange system has incoming and outgoing lines connected over a line connection unit, and traffics cyclically with a memory unit over a transmission sequence control. The memory contains all data and programs necessary for operat-

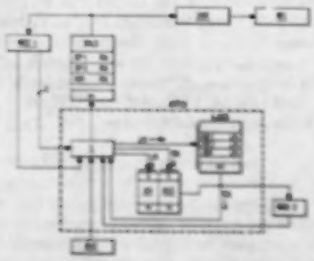
ing the system. In the memory a storage cell is permanently assigned to each connection. A program control unit is provided for controlling all processing functions. Under the control of a program, signals are entered into feeder cells in the memory, which are assigned permanently to the incoming connection lines. The contents of the feeder cells are read out by the transmission sequence control during the following memory cycle for the feeder cell in question. The signal extracted from the feeder cell are evaluated for handling the next polarity change arriving on the line assigned to this feeder cell. Depending on a first signal, a polarity change arriving on an incoming connection line is entered into a first storage area of the memory, and depending on a second signal, a substitution block in the memory is assigned to the feeder cell. Responsive to a third signal, a polarity change arriving on an incoming connection line is forwarded to an outgoing connection line determined by an address contained in the feeder cell. For transmission of polarity changes through the system at the correct time command words are entered under the control of the program into a second storage area of the memory, and these command words are read out by the transmission sequence control during a search process started in specific time intervals.



3,768,080
DEVICE FOR ADDRESS TRANSLATION

Klaus Boger, Ehningen; Hellmuth R. Geng, Schoenaich; Volkmar Gotze, and Johann Hajdu, both of Boeblingen, all of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 20, 1972, Ser. No. 219,359
Claims priority, application Germany, July 31, 1971, P 21 34 816.3
Int. Cl. G11c 7/00
U.S. Cl. 340—172.5 6 Claims

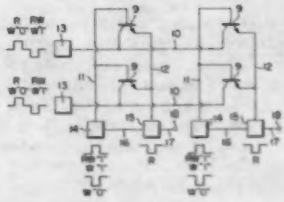


In a microprogrammed processor, a pair of register means and an associative store are arranged to eliminate the need to translate, for each microinstruction, a logical address to a real address to access main storage. Translation is required only once for each program or machine level (macro) instruction. The real addresses of the first bytes of the current instruction and its operand(s) are stored in a first one of the register means and are normally incremented to access the remainder of the instruction and operands byte-by-byte. In addition, the first register means and incrementer can be used to access sequentially stored instructions in a program sequence without address translation. When a page boundary is crossed during said incrementing, the logical page address of the current instruction or operand (which is at the boundary) is read from the second register means and is incremented to form the logical address of the next sequential page. This new logical address is searched in the associative array. If a match occurs, the new logical address is stored in the second register means, and the corresponding real address is stored in the first register means. This hardware translate means significantly reduces translate time.

3,768,081
MINORITY CARRIER STORAGE DEVICE HAVING SINGLE TRANSISTOR PER CELL

Takashi Asaoka, Tokyo, and Nobuaki Ieda, Tokorozawa, both of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Feb. 22, 1971, Ser. No. 117,640
Claims priority, application Japan, Feb. 27, 1970, 45/16458
Int. Cl. G11c 11/40
U.S. Cl. 340—173 R 3 Claims



Writing and read-out are accomplished by use of minority carrier storage effect in the PN junction between the base and collector of a transistor by suitably and selectively switching potentials applied to the base, emitter and collector of the transistor. In addition the potential application across the base-emitter junction is influenced by the stored minority carriers so that the current flowing between the collector and emitter may be controlled, and a longer retention of information is permitted. A single transistor element stores a single bit of information.

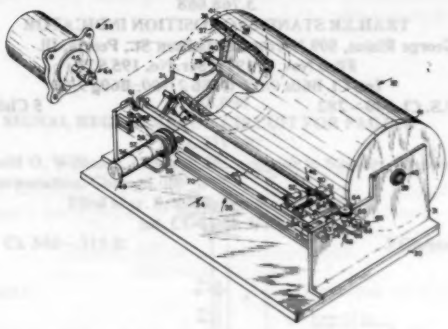
3,768,082
MAGNETIC DRUM STORAGE APPARATUS

Gary N. Stapleford, and Robert E. Tellier, Nashua, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Nov. 28, 1969, Ser. No. 880,583
Int. Cl. G11b 5/00
U.S. Cl. 340—174.1 C 19 Claims

A random access magnetic drum memory for storage of digital and analog information, having a plurality of parallel, axially extending data tracks, is incrementally rotated to a predetermined position in response to a command signal. Once the data track indicated by an input address has been located, a transducer is scanned axially on the drum to read out the data stored in such track or to record data on such track. The transducer is scanned by means of a carriage drive motor either in a step-mode or in a linear mode. Once the addressed data track or portion thereof has been scanned, a

spring return mechanism causes the transducer to return to its initial position. Apparatus is also disclosed for determining the position of the transducer on the track so that, if desired, only



a portion of the track need be scanned. Also disclosed is a dual track arrangement so that both audio and digital information may be played back or recorded at the same time.

3,768,083

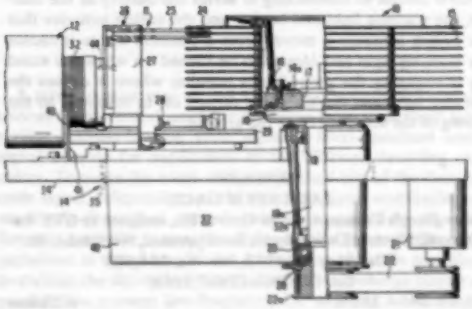
BASEPLATE ASSEMBLY FOR A DISC DRIVE

Ivan Pejcha, Santa Clara, Calif., assignor to Information Storage Systems, Inc., Cupertino, Calif.

Filed Aug. 10, 1972, Ser. No. 279,351

Int. Cl. G11b *1/00*

U.S. Cl. 340—174.1 C **8 Claims**



This invention relates particularly to direct access data storage devices, and more particularly, to a disc drive wherein data is recorded on a rotating disc by means of a read/write head moveable to precise data track positions located on the disc surface. For accurate positioning of the head relative to the disc, the head support mechanism and the disc are supported on a baseplate assembly of a special design.

3,768,084

PARTICLE COUNTER HAVING A CLOG AND BUBBLE ALARM

John L. Haynes, Redwood City, Calif., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

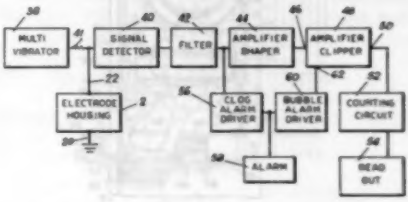
Filed July 14, 1972, Ser. No. 271,753

Int. Cl. G08b *19/00*; G06m *11/00*; G01n *27/00*

U.S. Cl. 340—243 **7 Claims**

A fluid containing disbursed particles having a conductivity substantially different than the fluid is pumped through an aperture. A pair of electrodes are mounted so that one electrode is on each side of said aperture and an *rf* signal is imposed upon the electrodes to develop a voltage across the fluid passing through the aperture. The *rf* signal is modulated by the conductivity of the fluid instantaneously passing through the aperture so that when a high resistance particle passes through the aperture, the *rf* signal intensity increases in relationship to the *rf* signal intensity when fluid is passing through the aperture. The *rf* signal is then detected, filtered and amplified to provide pulses corresponding to the particles passing through the aperture. Means are provided for counting the pulses and for providing a readout indicating the number of particles contained in a unit volume of the fluid.

A clog alarm driver circuit is connected to receive the filtered rf signal and in response to a constant high level filtered



signal provides an output to an alarm for indicating a clogged aperture. The amplified signal is directed to an amplifier clipper which further amplifies the signal and establishes a base line at 8 volts DC with pulses having an amplitude of approximately 4 to 6 volts. The presence of bubbles at the aperture causes an erratic signal which appears as base line noise and includes excursions below the 8 volt DC base line output. These excursions intermittently turn on a transistor which provides an output signal to a bubble alarm driver which in response thereto provides an output to the previously-mentioned alarm. A continuous alarm indicates a clogged aperture while an intermittent alarm indicates the formation of bubbles at the aperture.

3,768,085

BLINKER LIGHT CONTROL UNIT

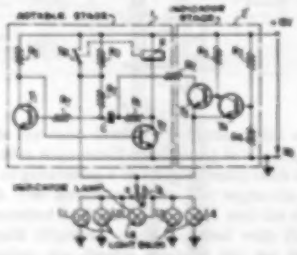
Rudolf Gebhardt, Heilbronn, and Paul Sieber, Heilbronn-Bocklingen, both of Germany, assignors to Licentia, Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 834,090, June 17, 1969, abandoned. This application Oct. 29, 1970, Ser. No. 85,038

Claims priority, application Germany, Oct. 29, 1969, P 19 54 295.1

Int. Cl. G08b *21/00*

U.S. Cl. 340—251 **10 Claims**



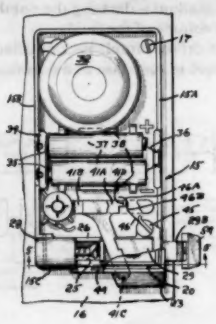
A transistorized blinker control unit, particularly for use in an automobile, composed of an oscillator stage arranged to cyclically illuminate selected signal bulbs and to apply a measuring voltage to the selected bulbs during the dark portions of their operating cycles, and an indicator stage arranged to produce a malfunction indication when the measuring voltage changes due to one of the selected bulbs becoming inoperative.

3,768,086

ALARM ATTACHABLE TO A DOOR

David S. Powell, Brighton, and Charles B. Weeks, Boston, both of Mass., assignors to Norris Industries, Inc., Los Angeles, Calif.

Filed Nov. 22, 1971, Ser. No. 200,782
Int. Cl. G08b 13/08
U.S. Cl. 340—274 20 Claims



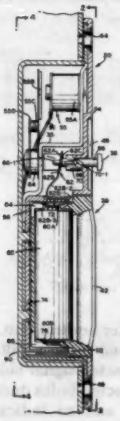
An alarm has a housing attachable to a door and provided with a spring-operated actuator restrained by a striker that is either attached to doorway structure or so attached to the housing as to move relative thereto out of its actuator-restraining position as the door is opened. The alarm includes an operating member movable by the actuator when driven by its spring into an operative position only from a set position as the door is opened, in which operative position it closes an electric circuit to an audible signal. The operating member is wholly within the housing in its circuit-closing position and the housing has a plurality of identical, manually rotatable buttons exposed on its cover to a selected one of which an arm is connected that is operable to reset the operating member thereby the open the circuit.

3,768,087

INTRUSION DETECTING ALARM SYSTEM

Gordon E. Kaye, Garrison, and George Sussingham, Mt. Vernon, both of N.Y., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed June 23, 1972, Ser. No. 265,609
Int. Cl. G08b 13/08
U.S. Cl. 340—274 14 Claims



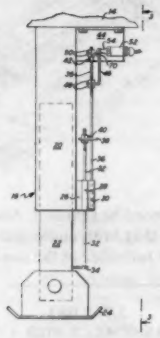
An intrusion alarm including a vibrator, an energizing battery, and a switch controllable by an intrusion detector element to connect the battery to the vibrator, all mounted on a frame to be mounted on a vibratable panel, such as a door or window pane.

3,768,088

TRAILER STAND LEG POSITION INDICATOR

George Risius, 809 Northeast Madison St., Peoria, Ill.

Filed Nov. 5, 1971, Ser. No. 195,931
Int. Cl. B60s 9/00; G08b 21/00; B60g 9/00
U.S. Cl. 340—282 5 Claims



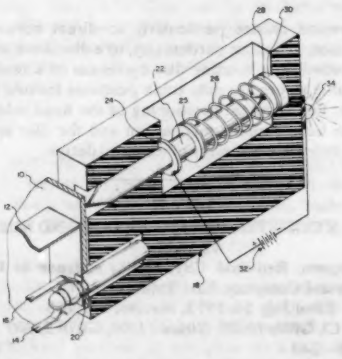
A signalling arrangement for warning when the stand leg of a trailer, that is connected to a tractor, is not raised off the ground. The signalling arrangement includes a warning light and a buzzer mounted on the instrument panel of the tractor, a switch actuator located in the trailer in such a position as to be shifted when the stand leg is raised from the ground, and an electric circuit so connecting in series the battery in the tractor, the warning light and buzzer and the switch actuator that the switch actuator is moved from a position where it causes the warning light and buzzer to be turned on when the stand leg is engaging the ground to a position where it causes the warning light and buzzer to be turned off in response to the raising of the stand leg from the ground.

3,768,089

JACK STRIP GAGE

James Joseph Costanzo, River Grove, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed May 18, 1972, Ser. No. 254,683
Int. Cl. C08b 13/00, 21/00
U.S. Cl. 340—282 R 6 Claims



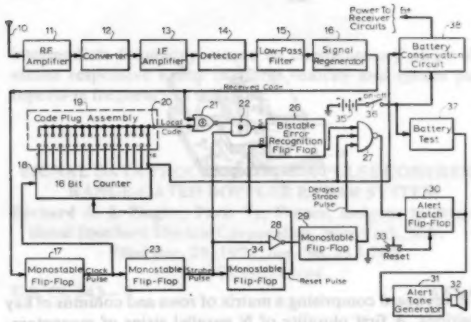
A device to test the adequacy of the retaining power of a plug jack wherein a conductive, spring loaded plunger pro-

vides an outward force of a selected level which tends to withdraw a plug from the jack being tested. When the jack retaining power is inadequate the conductive plunger opens an electrical circuit to thereby indicate a jack failure.

3,768,090
SIGNAL REGENERATOR CIRCUIT FOR PAGING RECEIVER

Ronald O. Williams, Chicago, Ill., assignor to Stewart-Warner Corporation, Chicago, Ill.

Filed Mar. 8, 1972, Ser. No. 232,882
Int. Cl. G08b 3/10
U.S. Cl. 340—311 R **3 Claims**



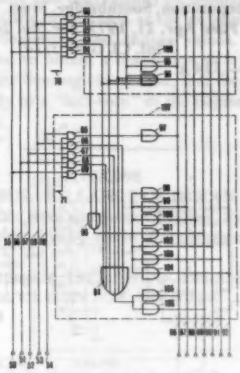
A signal regenerator circuit for a selective paging receiver utilizes a differential amplifier to derive from a received subscriber address-bearing code signal a level-equalized code signal suitable for application to the receiver decoding circuitry. To make the width of the individual bits of the derived code signal independent of the received signal amplitude, an amplitude-dependent control voltage is applied to the differential amplifier to vary the slicing level of the amplifier with variations in signal amplitude. A clamping circuit is provided to stablize the slicing level, and a capacitor discharge circuit is provided to prevent low-frequency DC skewing by the large interstage coupling capacitance employed in the regenerator circuit.

3,768,091
SYSTEM FOR GENERATING WHOLE AND COMPOSITE PATTERNS FOR A DISPLAY DEVICE

Katsushi Naka, Ise City, Mie Prefecture, Japan, assignor to Ise Electronics Corporation, Ise City, Japan

Filed Sept. 3, 1971, Ser. No. 177,635
Claims priority, application Japan, Sept. 7, 1970, 45/77946
Int. Cl. G06f 3/14
U.S. Cl. 340—324 AD **2 Claims**

A pattern generating system for use with a display device including a matrix electrode assembly comprises a plurality of pattern signal generators for displaying different patterns on the matrix electrode assembly. Means is provided to selectively drive one of the plurality of pattern signal generators for displaying a selected one of the patterns or simultaneously driving a plurality of pattern signal generators for displaying modified patterns on the matrix electrode assembly by synthesizing different patterns. Alternatively, a partial pattern

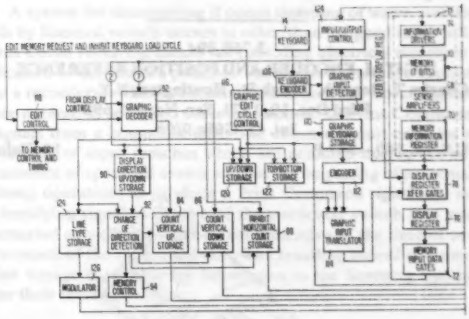


signal generator is added which is driven concurrently with one of the plurality of pattern signal generators for displaying a modified pattern.

3,768,092
GRAPHIC DISPLAY APPARATUS

Thomas J. Dodds, Jr., Secane, and Harold F. Gibson, Downington, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Oct. 21, 1971, Ser. No. 191,408
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A **3 Claims**



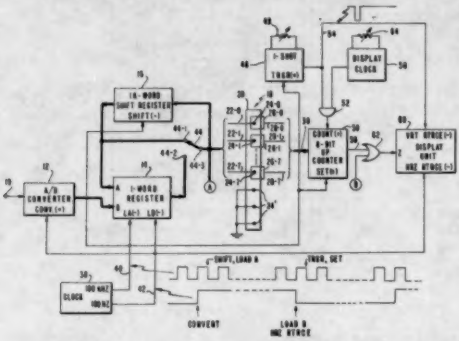
A cathode ray tube display apparatus which uses a set of character codes sequentially addressed in a storage device in the process of generating a line-type display such as, for example, a graph. The direction of the line segments forming the display is encoded in the character set, and the direction encoded in each character code together with the character code determine the display position for the line segment represented by the next character code in the sequence. Input to the storage device is through a keyboard, but may be from an external source such as, for example, a data processor. The number of input keys is less than the number of character codes in the set, so that the display apparatus determines the nature of the character code to be loaded into the storage device by each keyboard input. A background line-type scale for the graph, in the form of coordinate axes, is also generated and displayed.

3,768,093

DIGITAL CRT SYSTEM FOR DISPLAYING A PRECESSING WAVEFORM AND ITS DERIVATIVE

Christopher C. Day, Newtonville, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Apr. 21, 1972, Ser. No. 246,221
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 20 Claims



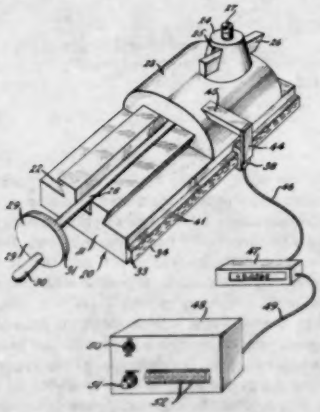
A system for displaying the derivative of a waveform together with the waveform. Successive digital samples of the waveform are circulated with each sample controlling a dot display during a respective vertical trace. As new samples are taken and stored in the circulating register which contains a number of stages greater than the number of vertical sweeps in each frame, the waveform appears to move from right to left across the screen. Because samples of the original waveform are taken at a fixed rate, samples of its derivative can be derived by subtracting successive samples from each other. The derivative samples are formed as the original samples are shifted out of the circulating register prior to the vertical sweeps.

3,768,094

DIGITAL ENCODER AND POSITION REFERENCE

Charles T. Henrich, 7 High St., Huntington, N.Y.

Filed Dec. 10, 1971, Ser. No. 206,690
Int. Cl. G08c 9/08
U.S. Cl. 340—347 P 12 Claims



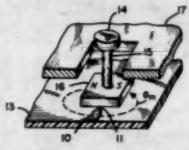
A position indicating apparatus having fixed and movable parts with one of the parts having magnetic position reference information thereon and the other part containing a flux sensitive element for sensing the position reference information and indicating the position of the sensor relative to the reference. The reference may be linear, circular, or cylindrical to conform to the need for measuring linear and/or angular displacements.

3,768,095

MAGNETORESISTIVE KEYBOARD

Stanley J. Lins, Minneapolis, and David G. Hanson, Coon Rapids, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Sept. 11, 1972, Ser. No. 287,939
Int. Cl. G06f 3/02
U.S. Cl. 340—365 L 9 Claims



A keyboard comprising a matrix of rows and columns of key positions. A first plurality of N parallel strips of magnetoresistive material are formed in a horizontal direction on a glass substrate. A plurality of magnets are arranged side-by-side in a first position over said strips and can selectively be moved to a second position close to said strips so that the magnetic field therefrom passes through said strips. Portions of preselected strips under each magnet are caused to have a narrowed configuration so as to form resistors whose value will change as the associated magnet is moved to its second position. Owing to a resultant change in the magnetic field through the strips, pulses will be generated in an electrical current which is always flowing through each strip. Such pulses form a coded binary output which is sensed by suitable sensing means. Only one sensing means is required for each strip and represents a particular binary bit position. The binary bit positions represented by all N strips form a binary coded word. In a similar manner other pluralities of N magnetoresistive strips are also formed horizontally on said substrate with other pluralities of magnets being positioned thereover. Those strips in each plurality of strips which represent corresponding bit positions are all connected to the same sensing means. Consequently the corresponding bit positions under all of the magnets are connected to the same sensing means and only N sensing means are required for the entire system.

3,768,096

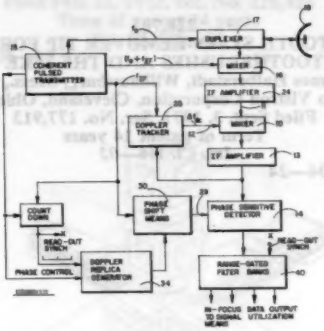
FOCUSING CONTROL OF SYNTHETIC APERTURE PROCESSING FOR SIDELOOKING RADAR

Mauro J. Dentino, Placentia, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Sept. 30, 1968, Ser. No. 763,891
Int. Cl. G01s 9/02
U.S. Cl. 343—7 A 13 Claims

In a sidelooking radar adapted for airborne use in a synthetic aperture application, means for continuous doppler

focusing of the radar receiver output. A phase sensitive detector, coupled to the output of a clutter-referenced intermediate frequency receiver stage, has a reference input coupled to an



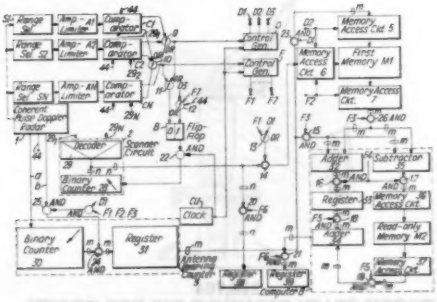
intermediate frequency source by compensatory phase shift means responsive to the platform velocity and system pulse repetition frequency of the radar.

3,768,097

SIGNAL DATA PROCESSOR FOR A PULSE COHERENT RANGE-GATED DOPPLER RADAR SYSTEM

Bernard A. J. Ziegler, Paris Ve, France, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,704
Int. Cl. G01s 9/44
U.S. Cl. 343—9 **6 Claims**



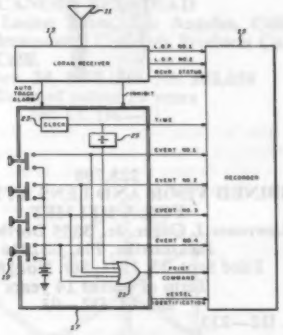
A target bearing angle refinement device for use in a radar set such as a coherent pulse Doppler radar. The radar phase detector output containing a Doppler modulation component is applied to range selector circuits which are narrow, range increment gating devices providing Doppler (MTI) filtering with restored range information. Target bearing width is determined as a target echo signal crosses an amplitude threshold (increasing and decreasing) by sampling a continuously encoded bearing description as the antenna rotates and differencing the beginning and ending values. A read-only memory is sampled to obtain a correction as a function of a target's width in the bearing coordinate, and the correction is added algebraically to a "half-sum" of the beginning and ending bearing values.

3,768,098

SYSTEM FOR SURVEILLANCE OF OCEAN DUMPING

Pio J. Bizzigotti, Dix Hills, and John Charlton, Syosset, both of N.Y., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Sept. 6, 1972, Ser. No. 286,633
Int. Cl. G01s 1/24; G01d 9/28
U.S. Cl. 343—103 **6 Claims**



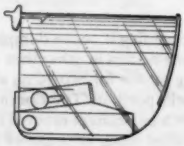
A system for determining if ocean dumping of waste materials by licensed vessels occurs in other than assigned areas utilizes Loran receiving means for providing electrical signals indicative of the vessel's position. The Loran signals are applied to a recorder in which permanent records of the Loran signals are entered at specified times in response to Print Command signals from a command unit. The command unit contains a plurality of input switches which are actuated during the occurrence of specified events such as the beginning of an actual dump operation, to produce a Print Command signal and an identifying signal indicative of the particular switch that was actuated as well as a clock signal indicative of the time of occurrence of the recorded event. The resulting record of an entire voyage is suitable for submission to the licensing agency for their review.

DESIGNS

OCTOBER 23, 1973

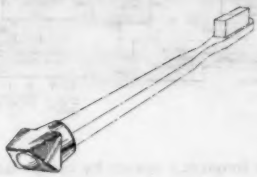
228,699
PLEATED KAFTAN
George P. Keyloun, 7205 Narrows Ave., Brooklyn, N.Y. 11209
Filed July 2, 1970, Ser. No. 23,813
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—49

228,700
COMBINED VISOR AND LENS ATTACHMENT FOR A HELMET
Lawrence J. Gager, Jr., 3355 Dorthea Road, Jacksonville, Fla. 32216
Filed Sept. 23, 1971, Ser. No. 183,290
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—233

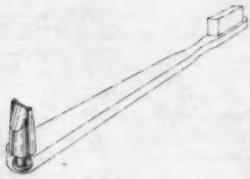


228,701
SANDAL
James R. Ostergaard, 3228 W. Olive Ave., Fresno, Calif. 93728
Filed Apr. 14, 1972, Ser. No. 244,335
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—287

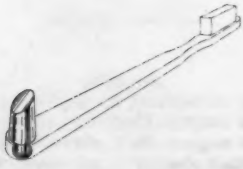
228,702
TOOTH STAIN-REMOVER TIP FOR TOOTHBRUSHES AND THE LIKE
Lewis James Halberstadt, Williamsburg, Mass., assignor to Vistron Corporation, Cleveland, Ohio
Filed Sept. 3, 1971, Ser. No. 177,913
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—24



228,703
TOOTH STAIN-REMOVER TIP FOR TOOTHBRUSHES AND THE LIKE
Lewis James Halberstadt, Williamsburg, Mass., assignor to Vistron Corporation, Cleveland, Ohio
Filed Sept. 3, 1971, Ser. No. 177,917
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—24



228,704
TOOTH STAIN-REMOVER TIP FOR TOOTHBRUSHES AND THE LIKE
Lewis James Halberstadt, Williamsburg, Mass., assignor to Vistron Corporation, Cleveland, Ohio
Filed Sept. 3, 1971, Ser. No. 177,918
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—24

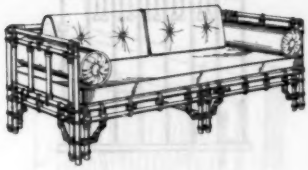


228,705
PEDESTAL BASE
Stanley E. Thorwaldsen, Grosse Pointe Farms, Mich., assignor to Lear Siegler Incorporated, Detroit, Mich.
Filed Feb. 22, 1972, Ser. No. 228,426
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—29

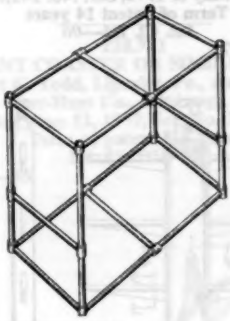
228,706
CHAIR
Ralph Mondragon, P.O. Box 199, Taos, N. Mex. 87571
Filed Apr. 25, 1972, Ser. No. 247,505
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—31

228,707
CHAIR
Eero Aarnio, Niittykumpu, Finland, assignor to Asko Osakeyhtio, Lahti, Finland
Filed Apr. 24, 1972, Ser. No. 247,233
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—67

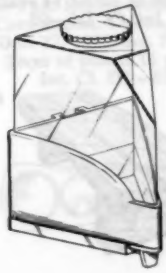
228,708
SOFA
Henry Olko, Applegreen Drive, Old Westbury, N.Y. 15568
Filed Jan. 11, 1972, Ser. No. 217,073
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—57



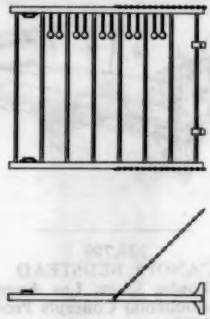
228,709
CANOPY BEDSTEAD
Jack Klotz and Louise Klotz, Los Angeles, Calif., assignors to Environmental Concepts Products Co., Inc., Beverly Hills, Calif.
Filed Nov. 24, 1971, Ser. No. 202,058
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—83



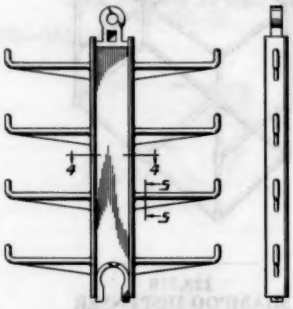
228,710
SHAMPOO DISPENSER
Robert S. Stevenson, 44 Camp St., Middletown, Conn. 06457
Filed Feb. 28, 1972, Ser. No. 230,182
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—95



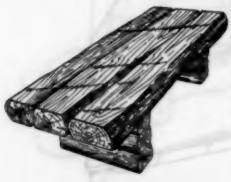
228,711
COMBINED TIE AND GARMENT RACK
Arthur S. Wynne, Sr., 1368 Wrenwood, Memphis, Tenn. 38103
Filed July 22, 1971, Ser. No. 165,441
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—116



228,712
RACK FOR NECKTIES OR THE LIKE
Daniel J. Martin, Middleburg Heights, Ohio (7830 Prouty Road, Lodi, Ohio 44254)
Filed May 6. 1971, Ser. No. 141,069
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—117

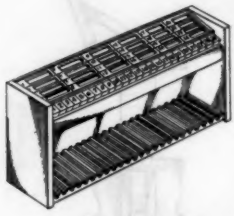


228,713
STACK LEG TABLE
Roy Bruce Lindvall, St. Peter, Minn., assignor to Beam Furniture, Inc., St. Peter, Minn.
Filed July 17, 1972, Ser. No. 272,642
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

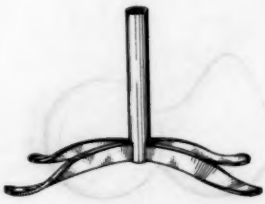


228,714
DISPLAY RACK
Lindell D. Watley, Hastings, Nebr., assignor to Ag-Tronic, Inc., Hastings, Nebr.
Filed Feb. 28, 1972, Ser. No. 230,199
Term of patent 7 years
Int. Cl. D6—*06*
U.S. Cl. D6—180

228,715
COMBINED HOLDER AND DISPENSER FOR CASSETTES, CARTRIDGES AND THE LIKE
William P. McRae, 19969 Acre St., Northridge, Calif. 91324
Filed Apr. 14, 1972, Ser. No. 244,351
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—188



228,716
FURNITURE PEDESTAL
Gideon A. Kramer, Seattle, Wash., assignor to American Desk Manufacturing Company, Temple, Tex.
Filed July 1, 1971, Ser. No. 159,088
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196

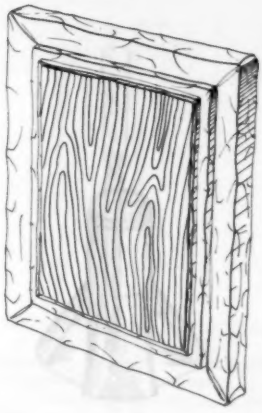


228,717
CHAIR ARM
Gideon A. Kramer, Seatttle, Wash., assignor to American Desk Manufacturing Company, Temple, Tex.
Filed July 1, 1971, Ser. No. 159,089
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—194

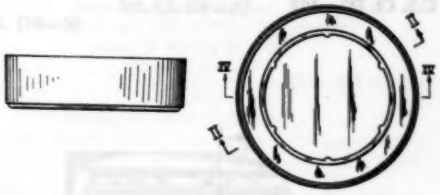
228,718
MULTIPLE SEATING FURNITURE SUPPORT
Gideon A. Kramer, Seattle, Wash., assignor to American Desk Manufacturing Company, Temple, Tex.
Filed July 1, 1971, Ser. No. 159,090
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196

228,719
HEAD SUPPORT FOR BEAUTY CHAIR
Gale Mullowney, 35 Park View Ave., Bronxville, N.Y. 10708
Filed Jan. 31, 1972, Ser. No. 222,440
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—200

228,720
PLAQUE
Raymond Stephen Cowan, R.R. 1, Highway 7, Unionville, Ontario, Canada
Filed Mar. 8, 1971, Ser. No. 122,271
Claims priority, application Canada Jan. 22, 1971
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—244

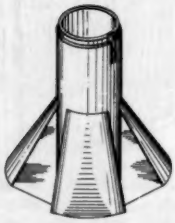


228,721
RESILIENT COASTER OR SIMILAR ARTICLE
Burt K. Todd, Ligonier, Pa., assignor to Kerr-Hays Co., Pittsburgh, Pa.
Filed June 13, 1972, Ser. No. 262,271
Term of patent 3½ years
Int. Cl. D7—*99*
U.S. Cl. D7—45

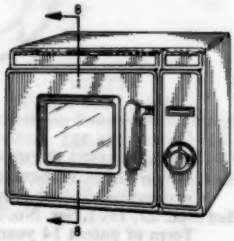


228,722
MEASURING SPOON
Gary S. Grimes, Twin Lakes, Ohio, assignor to Questor Corporation, Toledo, Ohio
Filed Dec. 27, 1971, Ser. No. 212,862
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—50

228,723
REMOVABLE INNER FUNNEL FOR A DISPENSING CONTAINER
Jack V. Croyle, Woonsocket, and James B. Swett, Barrington, R.I., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Jan. 3, 1972, Ser. No. 215,246
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—68

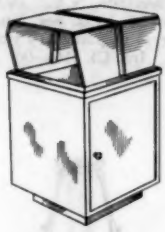


228,724
ELECTRONIC COOKING RANGE
Yoshio Suganoya and Takao Miyake, Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Nov. 4, 1971, Ser. No. 195,895
Claims priority, application Japan May 28, 1971
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



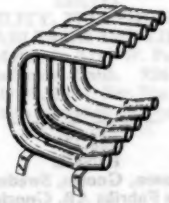
228,725
SPOON
Marguerite C. Steedman, P.O. Box 147, Mount Pleasant, S.C. 29464
Filed June 7, 1972, Ser. No. 260,706
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—144

228,726
TRASH RECEPTACLE
Robert Gault, Corfu, N.Y., assignor to Bennett Manufacturing Company, Inc.
Filed Sept. 20, 1972, Ser. No. 290,498
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—194

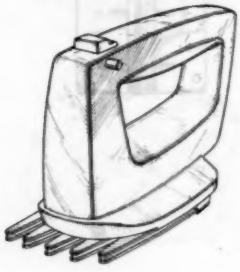


228,727
GARBAGE CAN RACK
William H. Harrell, P.O. Box 8393, Nashville, Tenn. 37207
Filed June 1, 1972, Ser. No. 258,912
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—189

228,728
FIREPLACE GRATE
Theodore R. Bergstrom, 51 Iona Lane, St. Paul, Minn. 55117
Filed Dec. 14, 1971, Ser. No. 208,054
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—207

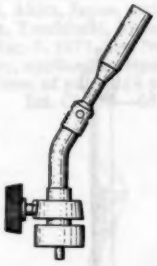


228,729
GRASS CLIPPER
Douglas W. Anderson, deceased, by Elizabeth A. Anderson, administratrix, Palatine, Ill., assignor to Burgess Vibrocrafters, Inc., Grayslake, Ill.
Filed Jan. 3, 1972, Ser. No. 215,286
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—8



228,730
BURNISHING TOOL
Donald E. Van Arnam, Surfside, Calif., assignor to Avery Products Corporation, San Marino, Calif.
Filed July 26, 1971, Ser. No. 166,333
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14

228,731
PROPANE BLOW TORCH
Robert Schmedes and John M. Nelson, Rochester, N.Y., assignors to Bernzomatic Corporation, Rochester, N.Y.
Filed Jan. 19, 1972, Ser. No. 219,200
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30

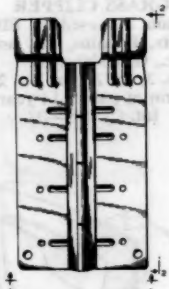


228,732
PERCUSSIVE TOOL
Irvin R. Danielson, Burr Ridge, Ill., assignor to Thor Power Tool Company, Aurora, Ill.
Filed Jan. 17, 1972, Ser. No. 218,660
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—70

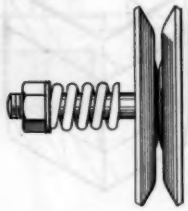
228,733
EXTENDED HANDCUFF-KEY
William E. Perkins, 4910 Fauna, and Richard D. Drake, 4922 Fauna, both of Montclair, Calif. 91763
Filed May 9, 1972, Ser. No. 251,858
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—136

228,734
COMBINED PANIC DEVICE, HANDLE, AND LOCK HOUSING SET
William J. Horgan, Jr., 1299 Folkstone Drive, Pittsburgh, Pa. 15213
Original design application Sept. 30, 1970, Ser. No. 25,284. Divided and this application Dec. 22, 1971, Ser. No. 211,164
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—138

228,735
HINGE
Carl-Eric Ericsson, Gnosjo, Sweden, assignor to Skogslunds Fabriks AB, Gnosjo, Sweden
Filed Mar. 30, 1972, Ser. No. 239,838
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—195

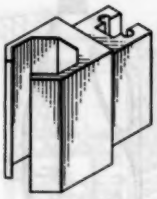


228,736
ROPE FASTENER
Albert E. Hall, 8885 Halvorson Drive, Elk Grove, Calif. 95624, and Benjamin A. Thompson, P.O. Box 864, Walnut Grove, Calif. 95690
Filed July 28, 1971, Ser. No. 167,062
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—229

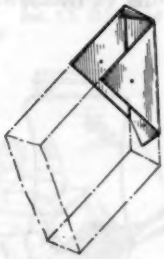


228,737
RACK FOR UTILITY, TELEPHONE AND POWER CABLES OR THE LIKE
Lyle H. Mathews, 2712 W. Porter St. 2, Fullerton, Calif. 92631
Filed July 29, 1971, Ser. No. 167,540
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—230

228,738
BRACKET COMPONENT FOR USE IN CONSTRUCTING A STRUCTURE SUCH AS A FRAMING FOR FURNITURE OR SHELVING
Alexander Rubin de Cervin Albrizzi, London, England, assignor to Albrizzi Ltd., London, England
Filed Oct. 27, 1971, Ser. No. 193,236
Claims priority, application Great Britain Aug. 5, 1971
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—235



228,739
STUD ANCHOR
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Filed May 5, 1971, Ser. No. 140,351
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235

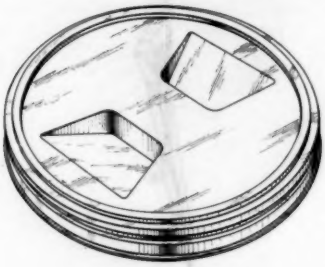


228,740
NAIL FOR HORSESHOES
Kamaichiro Izumi, Akita, Japan, assignor to Izumiteitetsu Kabushiki Kaisha, Tsuchizaki, Minato, Akita-shi, Japan
Filed Mar. 9, 1971, Ser. No. 122,651
Claims priority, application Japan June 29, 1970
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—271

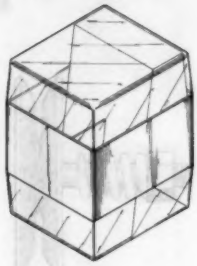
228,741
COMBINED JUG AND CAP THEREFOR
Christian Andersen Holme, Albertslund, Denmark, assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Dec. 29, 1971, Ser. No. 213,794
Claims priority, application Denmark July 30, 1971
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—43

228,742
JAR
Carl J. McCaleb, Mahwah, N.J., and Robert R. Ribetti, Woodhaven, N.Y., assignors to General Foods Corporation, White Plains, N.Y.
Filed Jan. 5, 1972, Ser. No. 215,700
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—134

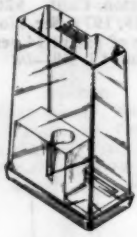
228,743
CLOSURE OR SIMILAR ARTICLE
Wayne E. Maw, Gladstone, Mo., assignor to Phillips Petroleum Company
Filed Sept. 20, 1971, Ser. No. 182,308
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—254



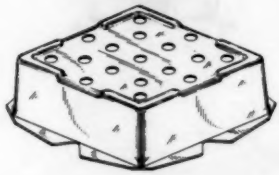
228,744
STORAGE CONTAINER FOR BUNDLE TIES OR THE LIKE
Paul Farkas, Elizabeth, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Aug. 19, 1971, Ser. No. 173,339
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—184



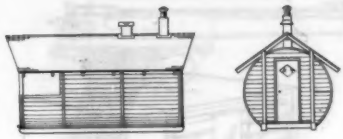
228,745
RAZOR KIT BOX OR SIMILAR ARTICLE
Martin Glaberson, Ardsley, N.Y., and Robert J. Gould, Fairfield, Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.
Filed Apr. 16, 1971, Ser. No. 134,792
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—186



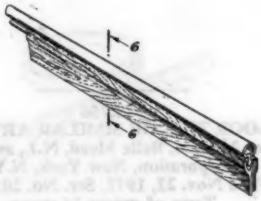
228,746
COVER FOR A PACKAGING TRAY
Morris William Kuchenbecker, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.
Filed May 17, 1971, Ser. No. 144,379
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—254



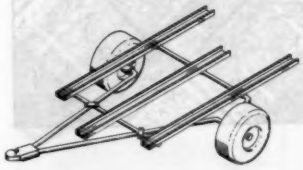
228,747
HUT
Eino A. Pihlaja, 101 Machar Ave., Thunder Bay, Ontario, Canada
Filed Mar. 8, 1972, Ser. No. 233,007
Claims priority, application Canada Nov. 9, 1971
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 R



228,748
WEATHERSTRIPPING
Alexander F. Littmann, 963 Fellowship Road, Santa Barbara, Calif. 93105
Filed June 19, 1972, Ser. No. 264,001
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6

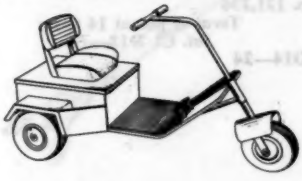


228,749
VEHICLE TRAILER
Malte Swensson, Los Angeles, Calif. (10741 Moorpark St., Apt. 30, North Hollywood, Calif. 91602)
Filed Dec. 20, 1971, Ser. No. 210,313
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D14—3 E

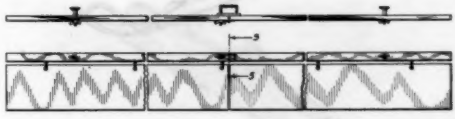


228,750
TEA CART
Henry Olko, Applegreen Drive, Old Westbury, N.Y. 11568
Filed Jan. 11, 1972, Ser. No. 217,075
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D14—3 M

228,751
GOLF CART
Richard E. Kouri, Akron, Ohio, assignor to Pow-R Corporation, Hartford, Conn.
Filed Mar. 24, 1972, Ser. No. 238,005
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—3 P



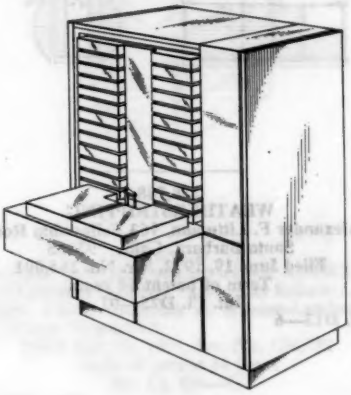
228,752
REMOVABLE SIDE GUARD FOR AUTOMOBILE
Mitsuru Tada, 618 S. Detroit St., Los Angeles, Calif. 90036
Filed Oct. 4, 1971, Ser. No. 186,600
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—6 B



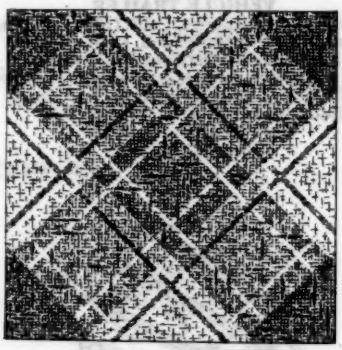
228,753
HEADER FOR A MOTORCYCLE EXHAUST SYSTEM
George J. Kryssing, 254 Madison Ave., Brentwood, N.Y. 11717
Filed Mar. 20, 1972, Ser. No. 236,539
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6 D

228,754
SNOWMOBILE
Joseph Mango, Midlothian, Ill., assignor to AMF Incorporated
Continuation of abandoned design application Ser. No. 19,747, Oct. 27, 1969. This application Mar. 4, 1971, Ser. No. 121,236
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—24

228,755
COMBINED SAMPLER AND AUTOMATED CHEMISTRY APPARATUS
Henry E. Amar, Bronxville, N.Y., Herman G. Diebler, North Haledon, N.J., and Jack Isreeli, Mamaroneck, George Payne, Bedford Hills, and William J. Smythe, Tarrytown, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.
Filed June 9, 1972, Ser. No. 261,561
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D16—2 C



228,756
FLOOR TILE OR SIMILAR ARTICLE
John Stanley Madsen, Belle Mead, N.J., assignor to GAF Corporation, New York, N.Y.
Filed Nov. 22, 1971, Ser. No. 201,259
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 B



228,757
HANDGUN
Harry W. Sanford, Arcadia, Calif., assignor to Auto Mag Corporation, Pasadena, Calif.
Filed Aug. 5, 1971, Ser. No. 169,602
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—1

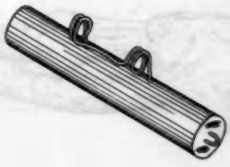
228,758
RING MOUNTED DEFENSIVE BLADE
Charles Petrosky, 1118 Jefferson St., Arlington, Va. 22205
Filed Oct. 14, 1971, Ser. No. 189,485
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—1

228,759
OFFSET FOR FISHING ROD ASSEMBLY
Ryuichi Ohmura, 19–3 Minami-cho, Shizuoka-shi, Shizuoka-ken, Japan
Filed Nov. 1, 1972, Ser. No. 302,805
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23

228,760
FISH STRINGER OR SIMILAR ARTICLE
Dixon R. Hoog, 1012 S. Clayton St., Bloomington, Ill. 61701
Filed Oct. 8, 1971, Ser. No. 187,940
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—24

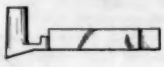
228,761
ARTIFICIAL FISHING LURE
J. A. Cutter Cunningham, Brownwood, Tex., assignor to Gladding Corporation
Filed Apr. 3, 1972, Ser. No. 240,880
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

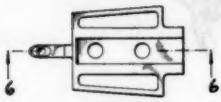
228,762
FISHING LURE RETRIEVER
Samuel D. Wantland, 6329 Hurstgreen Lane, St. Louis, Mo. 63123
Filed May 12, 1972, Ser. No. 252,967
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—31



228,763
FOAM GENERATOR
Mace H. Bell, Rowayton, and Richard H. Yagami, Westport, Conn., assignors to General Foods Corporation, White Plains, N.Y.
Filed Nov. 3, 1971, Ser. No. 195,534
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—17

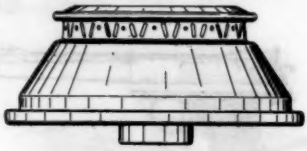
228,764
FLOW CONTROL LEVER FOR A FAUCET WITH SHOWER ATTACHMENT
Martyn Omar Rowlands, Epping, England, assignor to IMI Opella Limited (formerly IMI Developments Limited), Birmingham, England
Filed Aug. 23, 1971, Ser. No. 174,293
Claims priority, application Great Britain Feb. 25, 1971
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—27





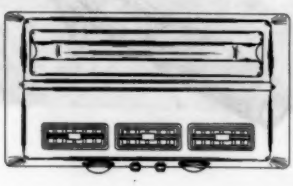
228,765
ARTIFICIAL LOG
Donald L. Henry, 12208 Park Ave., Santa Fe Springs, Calif. 90670
Filed Aug. 6, 1971, Ser. No. 169,889
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—94

228,766
GAS BURNER
Charles E. Stohrer, Jr., Hickory Hills, Ill., assignor to Harper-Wyman Company, Hinsdale, Ill.
Filed Dec. 8, 1971, Ser. No. 206,238
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—129

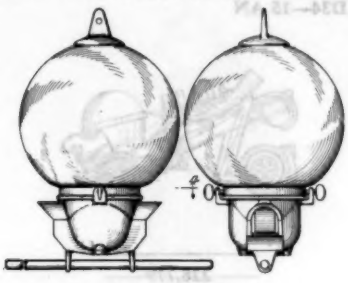


228,767
HOLDER FOR DENTAL FLOSS
Reese L. Anderson, 2712 SE. 58th Ave., Portland, Oreg. 97206
Filed Jan. 26, 1973, Ser. No. 326,605
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—1 D

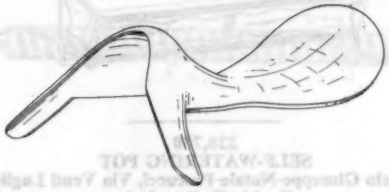
228,768
VEHICLE AIR CONDITIONER
Edward John Borowiec, Rockford, Ill., assignor to Kysor Industrial Corporation, Cadillac, Mich.
Filed Feb. 9, 1972, Ser. No. 225,028
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—142



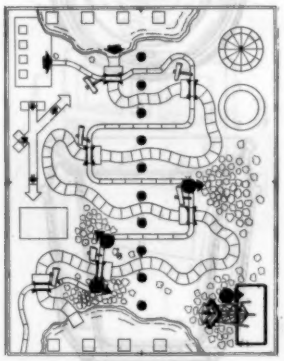
228,769
BIRD FEEDER
Ralph H. Bower, Goshen, Ind., assignor to The Bower Manufacturing Co., Inc., Goshen, Ind.
Filed Oct. 8, 1971, Ser. No. 187,941
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—15



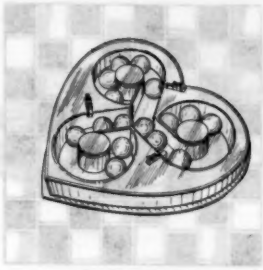
228,770
SADDLETREE OR SIMILAR ARTICLE
Robert Edward John Adeney, Saffron Walden, England, assignor to Swaine, Adeney, Briggs & Sons Ltd., Saffron Walden, Essex, England
Filed Oct. 13, 1971, Ser. No. 189,070
Claims priority, application Great Britain July 27, 1971
Term of patent 14 years
Int. Cl. D30—*04*
U.S. Cl. D30—20



228,771
GAME BOARD
Joseph G. Andre, Schwenksville, Pa. (83 5th Ave., Collegeville, Pa. 19426)
Filed Nov. 15, 1971, Ser. No. 199,086
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS

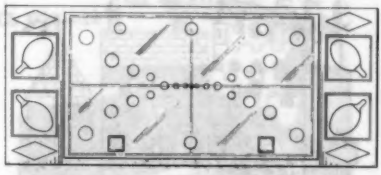


228,772
PUZZLE
Alan A. Hicks, Weston, Conn., assignor to Kohner Bros., Inc., East Paterson, N.J.
Filed Dec. 13, 1971, Ser. No. 207,715
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 M

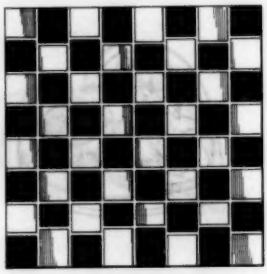


228,773
SKILL GAME CABINET
Jonathan W. Amy, West Lafayette, Ind., John H. Beynon, Buxton, England, and David O. Jones, Seattle, Wash., assignors to Analog and Digital Controls Corporation, West Lafayette, Ind.
Filed Aug. 11, 1971, Ser. No. 171,036
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 J

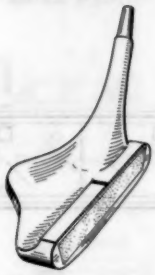
228,774
SKILL GAME CABINET
Johathan W. Amy, West Lafayette, Ind., John H. Beynon, Buxton, England, and David O. Jones, Seattle, Wash., assignors to Analog and Digital Controls Corporation, West Lafayette, Ind.
Filed Aug. 11, 1971, Ser. No. 171,037
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 J



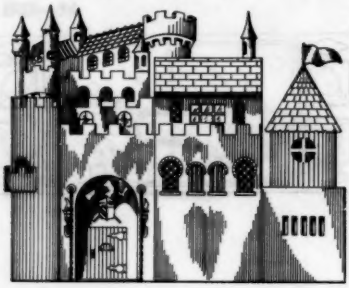
228,775
CHESS BOARD
Timothy M. Randell, 360 Caldwell Blvd., Nampa, Idaho 83651
Filed Mar. 20, 1972, Ser. No. 236,568
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



228,776
PUTTER HEAD
Samuel Lee, 10 Montesson St., Islington 678, Ontario, Canada
Filed July 14, 1972, Ser. No. 271,682
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



228,777
TOY CASTLE
Herbert J. Mueller, 4644 Verplanck Place NW., Washington, D.C. 20016
Filed Feb. 7, 1972, Ser. No. 224,408
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 LL



228,778
FIGURE TOY CAR
Adolph E. Goldfarb, Tarzana, Delmar K. Everitt, Woodland Hills, Ronald F. Chesley, La Crescenta, and Richard D. Frierdich, Canoga Park, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed May 1, 1972, Ser. No. 249,259
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AN

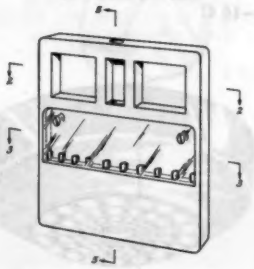
228,779
WINDOW BOX
Eugene T. Kleine, 87 Ocean Ave., Massapequa, N.Y. 11758
Filed June 21, 1972, Ser. No. 264,903
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 R

228,780
SELF-WATERING POT
Angelo Giuseppe Natale Pascucci, Via Venti Luglio, Gualdo Tadino, Italy
Filed Aug. 7, 1972, Ser. No. 278,295
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A

228,781
EXCAVATING TOOTH
Stanton F. Bierwith, San Leandro, Calif., assignor to Great Canadian Oil Sands, Limited, Toronto, Ontario, Canada
Filed May 18, 1972, Ser. No. 255,960
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D39—1 R

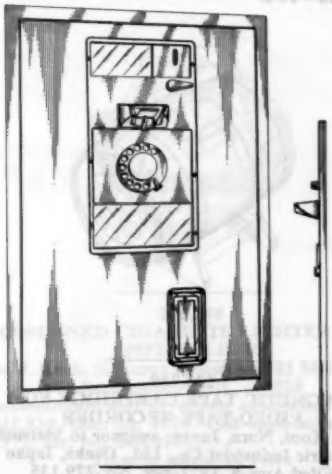
228,782
CABLE ASSEMBLY FOR A WAVE SENSOR
Patrick M. Taiani, Halifax, Nova Scotia, Canada, assignor to Nova Scotia Research Foundation, Dartmouth, Nova Scotia, Canada
Filed May 13, 1971, Ser. No. 150,866
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 A

228,783
MULTIPLE CONTACT ELECTRICAL CONNECTOR ASSEMBLY
Richard E. Brown, Gahanna, Ohio, assignor to Twyco, Inc., Blacklick, Ohio
Filed Oct. 22, 1971, Ser. No. 191,970
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 A

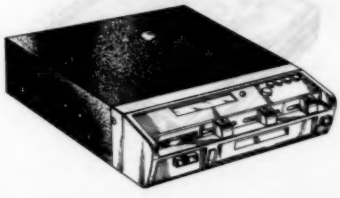


228,784
ELECTRONIC CALCULATING MACHINE
Isao Kitai, 22–22 Nagaike-cho Abeno-ku, Osaka, Japan
Filed Mar. 15, 1972, Ser. No. 228,475
Claims priority, application Japan Aug. 24, 1971
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

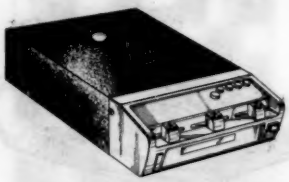
228,785
TELEPHONE PANEL ENCLOSURE
William M. Wollet, Huntsville, Ala., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed June 30, 1972, Ser. No. 267,837
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



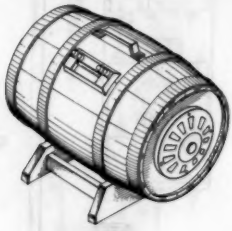
228,786
COMBINATION TAPE PLAYER AND RADIO
George E. Lyall, Melrose, Mass., assignor to Automatic Radio Mfg. Co., Inc.
Filed Aug. 14, 1972, Ser. No. 280,540
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



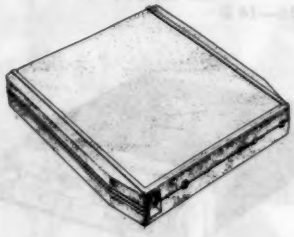
228,787
TAPE PLAYER
George E. Lyall, Melrose, Mass., assignor to Automatic Radio Mfg. Co., Inc.
Filed Aug. 14, 1972, Ser. No. 280,652
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



228,788
COMBINED PORTABLE TAPE DECK AND SPEAKER SYSTEM OR SIMILAR ARTICLE
Lester M. Moffet, 30427 1st Place S., Federal Way, Wash. 98002
Filed July 3, 1972, Ser. No. 268,773
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 B

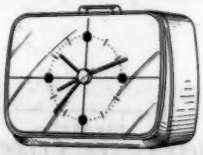


228,789
MAGNETIC TAPE CARTRIDGE FOR VIDEO-TAPE RECORDER
Yoshiji Koni, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 8, 1972, Ser. No. 279,135
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B

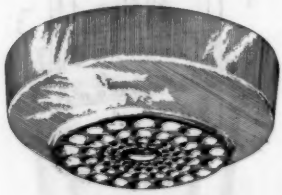


228,790
CHARGING STATION FOR ELECTRICALLY PROPELLED VEHICLES
Robert R. Aronson, Ferndale, Mich., assignor to Electric Energy Systems, Inc., Ferndale, Mich.
Filed July 8, 1971, Ser. No. 160,726
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15 B

228,791
ALARM CLOCK
Petrus Joannes Stut, Eelde, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed July 23, 1971, Ser. No. 165,431
Claims priority, application Switzerland Jan. 28, 1971
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 R



228,792
COMBINED LAMP REFLECTOR AND DIFFUSER
Michael G. Conrad, Detroit, Mich., assignor to Duralastic Lamp Products Company, Detroit, Mich.
Filed Oct. 5, 1972, Ser. No. 295,383
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D46—16 C



228,793
CANDLE HOLDER
William C. Shumate, P.O. Box 2821, Meridian, Miss. 39201
Filed Jan. 25, 1972, Ser. No. 220,729
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D48—2

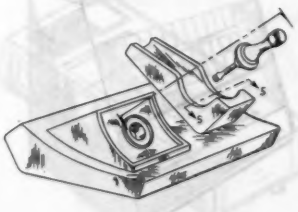
228,794
CEILING DOME FOR A HANGING LAMP
Sam De John, 4604 SW. 31st Drive, Hollywood, Fla. 33023
Filed Dec. 15, 1971, Ser. No. 208,508
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—7 D

228,795
WIRELESS LIGHTING FIXTURE
Curtiss M. Peasley, 25 Boulder Drive, Burlington, Mass. 01803
Filed Jan. 10, 1972, Ser. No. 216,888
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—4 B

228,796
CEILING DOME FOR A HANGING LAMP
Sam De John, 4604 SW. 31st Drive, Hollywood, Fla. 33023
Filed Dec. 15, 1971, Ser. No. 208,509
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—7 D

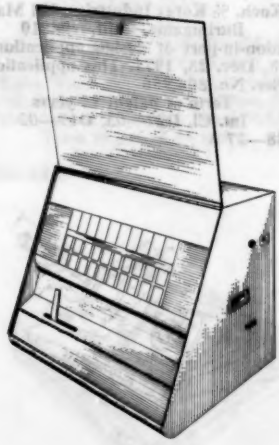
228,797
CEILING DOME FOR A HANGING LAMP
Sam De John, 4604 SW. 31st Drive, Hollywood, Fla. 33023
Filed Dec. 15, 1971, Ser. No. 208,512
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—7 D

228,798
COMBINED CIGARETTE LIGHTER AND PIPE HOLDER
Samuel J. Koch, % Korex Industries, 821 Malcolm Road, Burlingame, Calif. 94010
Continuation-in-part of design application Ser. No. 211,838, Dec. 23, 1971. This application Nov. 9, 1972, Ser. No. 304,956
Term of patent 14 years
Int. Cl. D27—*05*; D19—*02*
U.S. Cl. D48—27 A

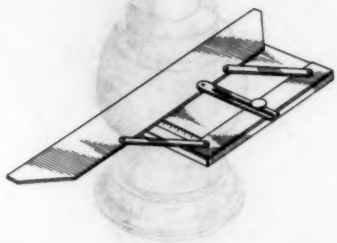


228,799
GOLF BALL CLEANER
Kenneth A. Roddy, 15322 E. Ritter Circle, Houston, Tex. 77071
Filed Dec. 22, 1971, Ser. No. 211,144
Term of patent 14 years
Int. Cl. D7—*05*; D15—*05*
U.S. Cl. D49—1 A

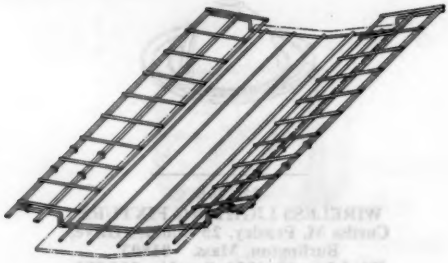
228,800
VOTING MACHINE
Michael Terrance Moldovan, Jr., Lakewood, N.Y., assignor to AVM Corporation, Jamestown, N.Y.
Filed Sept. 22, 1971, Ser. No. 182,933
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D52—2 R



228,801
GAUGE FOR PICTURE FRAME MAT CUTTER
Harold P. Penner, 945 S. Ambridge St., Anaheim, Calif. 92806
Filed May 5, 1972, Ser. No. 250,847
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R



228,802
EGG BELT TRACK
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Filed Apr. 2, 1971, Ser. No. 130,861
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 C



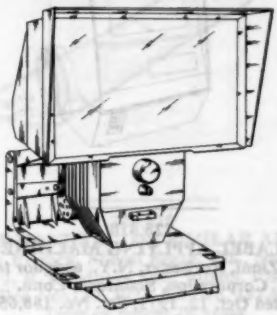
228,803
STEREO CONSOLE CABINET
Lindburg Hunt, 2905 Charing Cross Road, Falls Church, Va. 22042
Filed Apr. 4, 1972, Ser. No. 241,106
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 C

228,804
FRAME FRONT FOR SPECTACLES
Charles R. Harrell, 4256 Lyceum Ave., Los Angeles, Calif. 90066
Filed Oct. 12, 1971, Ser. No. 188,634
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

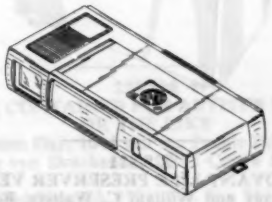
228,805
SPECTACLE FRAME FRONT
Charles R. Harrell, 4256 Lyceum Ave., Los Angeles, Calif. 90066
Filed Oct. 12, 1971, Ser. No. 188,635
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

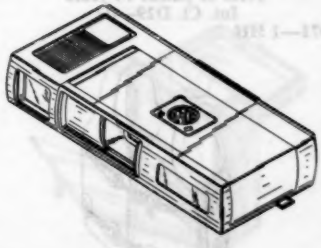
228,806
FRAME FRONT FOR SPECTACLES
Charles R. Harrell, 4256 Lyceum Ave., Los Angeles, Calif. 90066
Filed Oct. 12, 1971, Ser. No. 188,636
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

228,807
OPAQUE PROJECTION VIEWER
Alphonse P. Cinque, 65 Earle Ave., Lynbrook, N.Y. 11563
Filed Nov. 22, 1971, Ser. No. 201,255
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 N

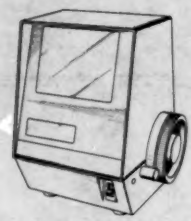


228,808
STILL CAMERA
Samuel F. Swayze, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 13, 1972, Ser. No. 217,723
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 B





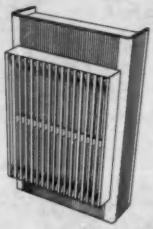
228,809
MICROFICHE VIEWER
John L. Jones, Gardena, Calif., assignor to UMF Systems Incorporated, Los Angeles, Calif.
Filed Feb. 18, 1972, Ser. No. 227,701
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 N



228,810
LABEL APPLYING MACHINE
John F. Zinni, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Oct. 12, 1971, Ser. No. 188,654
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 B

228,811
BUOYANT LIFE PRESERVER VEST
Clarence Maxey and William C. Walters, Bedford, Va., assignors to Groendyk Manufacturing Company, Inc., Buchanan, Va.
Filed Jan. 7, 1972, Ser. No. 216,336
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D71—1 HH

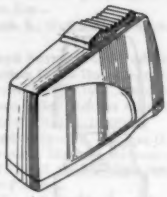
228,812
ALARM UNIT
Charles R. Suska, Roxbury, and Peter Thomson, Fairfield, Conn., assignors to The Stanley Works, New Britain, Conn.
Filed Sept. 8, 1971, Ser. No. 178,852
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D72—1 A



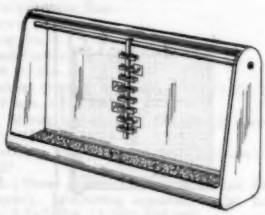
228,813
FELT TIP PEN
Noboru Wakai, Tokyo, Katutosi Ono, Kawasaki, and Masatoshi Adachi, Tokyo, Japan, assignors to Pentel Kabushiki Kaisha
Filed Dec. 28, 1970, Ser. No. 26,652
Claims priority, application Japan June 24, 1970
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17 B

228,814
STATIC TURBO-GASIFIER FOR USE IN FUEL-FEEDING SYSTEMS OF INTERNAL COMBUSTION ENGINES
Francisco Peraire Fabregat, Teodoro Llorente 23, Barcelona, Spain
Filed Feb. 26, 1971, Ser. No. 119,446
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1 A

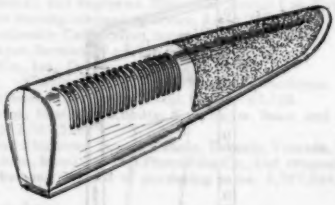
228,815
SURGICAL LANCET
Stephen P. Campbell, Jr., Brookline, Mass., assignor to Damon Corporation, Needham Heights, Mass.
Filed Oct. 22, 1971, Ser. No. 191,964
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 J



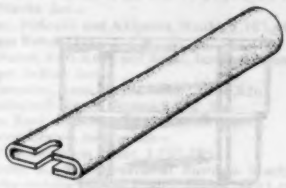
228,816
X-RAY DRYING RACK OR THE LIKE
Henrietta M. Horvath, 221½ Justice St., Fremont, Ohio 43420
Filed June 5, 1972, Ser. No. 260,048
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 H



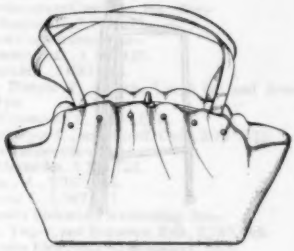
228,817
HAIR GROOMING IMPLEMENT HOLDER
Martin J. Wolff, West Haven, Conn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed June 15, 1972, Ser. No. 263,335
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



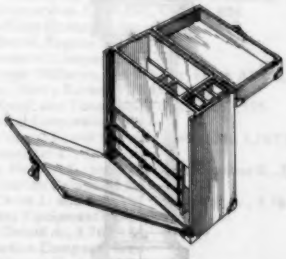
228,818
NEUROSURGICAL SUCTION DEVICE
Bertil Sven Vällfors, Goteborg, Sweden, assignor to Medena AB, Kungsbacka, Sweden
Filed Dec. 15, 1971, Ser. No. 208,515
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—12



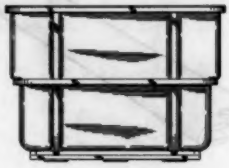
228,819
LADY'S HANDBAG, OR SIMILAR ARTICLE
Murray Resnick, Miami Beach, Fla., assignor to J. R. Handbags, Inc., Miami, Fla.
Filed Nov. 10, 1971, Ser. No. 197,591
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3 F



228,820
STORAGE CONTAINER FOR ARTIST'S MATERIALS OR THE LIKE
Andrea Alston Day, 1040 Iliff St., Pacific Palisades, Calif., and Alec von Drachenfels, 1342 Castro St., Monterey, Calif.
Filed Nov. 22, 1971, Ser. No. 201,246
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D87—1 R

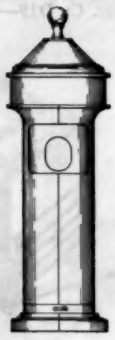


228,821
CONTAINER BODY FOR A WHEELED VEHICLE OR THE LIKE
Thomas H. White, Statesville, N.C., assignor to Rubbermaid Industrial Products Corporation
Filed Dec. 2, 1971, Ser. No. 204,404
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R



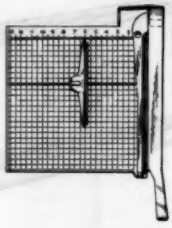
228,822
INVALID WALKER
Francis A. Vesey, P.O. Box 516, Lakeside, Ariz. 85929
Filed Sept. 7, 1972, Ser. No. 287,273
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D88—5 R

228,823
STANCHION FOR BEVERAGE TAP
Daniel J. Oelschlaeger, Oak Creek, Wis., assignor to Display Corporation International, Milwaukee, Wis.
Filed Apr. 7, 1972, Ser. No. 242,275
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D94—3 A



228,824
DRY SHAVER
Maarten Willem van Lelyveld, Elzebosstraat 15, Drachten, Netherlands
Continuation of design application Ser. No. 25,034, Sept. 17, 1970. This application Mar. 2, 1972, Ser. No. 231,450
Claims priority, application Switzerland Mar. 23, 1970
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A

228,825
PAPER CUTTER
Alvin R. Pottern, Longmeadow, Mass., assignor to Milton Bradley Company, East Longmeadow, Mass.
Filed May 16, 1972, Ser. No. 253,917
Term of patent 14 years
Int. Cl. D18—*04*
U.S. Cl. D95—1 R



228,826
LOOSELEAF BINDER
Douglas R. Cleminshaw, Syracuse, N.Y., assignor to Hall and McChesney Inc., Syracuse, N.Y.
Filed June 9, 1971, Ser. No. 151,631
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D97—2

LIST OF PATENTEES

TO WHOM

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Schleicher, Joseph Bernard; and Roderick, William R., 3,767,795.

Abdallah, Aboulmuniem H., to Dow Chemical Company, The. Method of inducing anorexia. 3,767,810, Cl. 424-309.000.

Abnett, Albert C.; and Boley, Robert A., to Autech, Inc. Engine timing computer. 3,768,004, Cl. 324-16.00r.

Aboaf, Joseph A.; and Sedgwick, Thomas O., to International Business Machines Corporation. Method for controlling semiconductor surface potential. 3,767,463, Cl. 117-215.000.

Abrahamson, Ernest P.: *See*—
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Aby, John F.; and Davis, James L., to Prodyne Enterprises. Food slicer. 3,766,817, Cl. 83-581.100.

Ackermann, Karl; Uecker, Siegfried; Socha, Rudolf; and Reiber, Heinz-Joachim, to Bosch, Robert, Photokino G.m.b.H. Electronic flash unit with flash tube ignition circuit mounted on back of reflector. 3,767,908, Cl. 240-1.300.

Adair, James Richard; and Deems, Ronald Wesley, to Wean United, Inc. Rolling mill control. 3,766,761, Cl. 72-8.000.

Adamcik, John A.: *See*—
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Adams Brothers Plastic, Inc.: *See*—
Adams, James S., 3,767,281.

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Addor, Roger Williams; and Wagner, Frank Albert, Jr., to American Cyanamid Company. Oximecarbamate pesticidal compositions and their use. 3,767,808, Cl. 424-298.000.

Adler, Karl; and Ducommun, George, to Biviator S.A. Miniaturized electric source. 3,767,947, Cl. 310-3.00d.

Aero Service Corporation: *See*—
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AGA Aktiebolag: *See*—
Teiling, Carl Torbern, 3,766,827.

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Agnone, John L.; Fister, Robert V.; and Sheppard, Jon C., to Eastman Kodak Company. Sputtering apparatus with accordion pleated anode means. 3,767,559, Cl. 204-298.000.

Ahrens, Paul Raymond, to RCA Corporation. High voltage regulator. 3,767,960, Cl. 315-27.0td.

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Rowe, Murray Edwin, 3,767,558.

Ainvarg, Arkady Semenovich. Inductor machine. 3,767,950, Cl. 310-168.000.

Air Preheater Company, Inc., The: *See*—
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Air Products and Chemicals, Inc.: *See*—
Carroll, Felix P.; and Panchak, John R., 3,767,602.
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Sullivan, Cornelius J., 3,767,888.

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Aiti, Guguielmo. Combustion chamber for internal combustion engines. 3,766,900, Cl. 123-191.00m.

Aizawa, Kensuki; and Sugiyama, Shigeo, to Tokico Ltd. Turbine flowmeter with bearing-lubrication device. 3,766,780, Cl. 73-231.00r.

Ajax Magnethermic Corporation, mesne: *See*—
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Ajinomoto Co., Inc.: *See*—
Hirose, Yoshiteru; Tobe, Sadanobu; Hoshimo, Masami; Hashimoto, Kohei; and Mitsugi, Koji, 3,767,532.
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Akashi, Coro; Kitamoto, Tatsuji; Katada, Takeshi; Yamada, Yasuyuki; and Kazuhiko, Morita, to Fuji Photo Film Co., Ltd. Magnetic recording member and method of producing same. 3,767,464, Cl. 117-237.000.

Akashi, Goro: *See*—
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Akiyama, Katsuhiro, to Sony Corporation. Photographic treatment for semiconductor devices or the like. 3,767,397, Cl. 96-36.200.

Akiyama, Naoki: *See*—
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Aktiebolaget Bahco: *See*—
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Akzona Incorporated, mesne: *See*—
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Albright, James A.: *See*—
Dorschnert, Kenneth P.; and Albright, James A., 3,767,818.

Albright, James A.; and Dorschner, Kenneth P., to SCM Corporation. Meta-ureidophenoxyalkyl carbamates. 3,767,699, Cl. 260-482.00c.

Albright, Robert L., to Rohm & Haas Company. Porous polymers with ionic functional groups based on polyfunctional methacrylates. 3,767,600, Cl. 260-2.20r.

Alco Standard Corporation: *See*—
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Alexander, James, to Scandia Packaging Machinery Company. Machine for securing a package tab. 3,766,707, Cl. 53-134.000.

Allais, Andre: *See*—
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Booth, Frederick C., 3,767,135.
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Allmanna Svenska Elektriska Aktiebolag: *See*—
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Allmanna Svenska Elektriska Aktiebolaget: *See*—
Ekstrom, Ake, 3,767,999.
Thorborg, Kjeld, 3,768,001.

Allport, Davies, to Kuhle, Karl F. Television camera scanner support assembly. 3,767,989, Cl. 318-266.000.

Alt, Gerhard H., to Monsanto Company. 1-(Naphthyl and naphthyloxy)-acetyl-2,2-dialkyl hydrazine acids. 3,767,623, Cl. 260-558.00h.

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Bruno, Marshall J.; Jarrett, Noel; and Slaugenhaupt, Burl L., 3,767,382.
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AMBAC Industries, Incorporated: *See*—
Voss, James R.; and Ferry, William R., 3,766,895.

Amberg, Stephen W.; Doherty, Thomas E.; Karabedian, James A.; and Heyne, Clarence A., to Owens-Illinois, Inc. Method of making a plastic-covered glass container. 3,767,496, Cl. 156-86.000.

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American Air Filter Company, Inc.: *See*—
Schaltenbrand, Eugene D., 3,766,712.

American Cyanamid Company: *See*—
Addor, Roger Williams; and Wagner, Frank Albert, Jr., 3,767,808.
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Takeya, Kenji; and Tanahashi, Kunio, 3,767,755.

American Optical Corporation: *See*—
Coates, Vincent J.; and Welter, Leonard M., 3,767,926.
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American Plasticraft Company: *See*—
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American Safety Equipment Corporation: *See*—
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Amoco Production Company: *See*—
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Anderson, Leslie Alan; Dlak, Frederick Robert; Foster, George Hails, Jr.; and Gentry, John Maury, 3,767,841.
Brehm, Ronald Carl; Long, Robert Alvin; and Over, William Roderick, 3,766,622.
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Ampex Corporation: *See—*
Barlow, Malcolm; and Lundquist, Jerry R., 3,767,369.
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Amplett, Philip Harold, to Jointine Products Company, Limited. Gaskets. 3,767,211, Cl. 277-1.000.
Amstad, John H. Centrifugal processing apparatus. 3,766,845, Cl. 99-324.000.
Amsted Industries, Incorporated: *See—*
Holibaugh, Ralph William, 3,767,062.
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Engelhardt, John S., 3,767,835.
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Ancel, Selwyn J., to Chemtrust Industries Corporation. Lavatory sanitation bodies. 3,766,576, Cl. 4-231.000.
Anderson, David B., Jr. Candle holding device. 3,767,355, Cl. 431-295.000.
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Angelo, Rudolph J.; Darms, Ronald; and Wysong, Robert D., to Du Pont de Nemours, E. I., and Company. Melt stable polyketone compositions. 3,767,620, Cl. 260-47.00r.
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Aoh, Toshiaki; and Yanagimachi, Kiyoshi, to Takasago Thermal Engineering Co., Ltd. Prefabricated module air conditioner. 3,766,750, Cl. 62-259.000.
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Arenas, Vincent E., to Wayne Manufacturing Company. Street sweeper gutter broom. 3,766,589, Cl. 15-180.000.
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Aro Corporation, The: *See—*
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Babcock, Guy L.; Bryant, Walter M.; Neugebauer, Constantine A.; and Brugess, James F., to General Electric Company. Method of direct bonding metals to non-metallic substrates. 3,766,634, Cl. 29-471.900.
Bachman, Anatole, to I-T-E Circuit Breaker (Canada) Limited. Electric distribution panel having extruded buses and contact stabs. 3,767,977, Cl. 317-119.000.
Bachman, Carl E.; Miller, Richard E.; and Smoots, Edwin H., to Pillsbury Company, The. Supporting disc for packaging cut flowers and the like. 3,767,104, Cl. 229-7.00r.
Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
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Holl, Norbert, 3,767,744.
Badovick, Peter, to New Chance Machine & Tool Co. Adjustable heel stand for use with workpiece clamps. 3,767,182, Cl. 269-94.000.
Bagley, Ferdinand A.: *See—*
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Bailey, Charles A. Remote vehicle starting system. 3,767,932, Cl. 290-38.000.

Bailey Meter Company: *See—*
Flais, Louis R.; and Gentile, Ralph G., 3,767,469.

Baker, Don R.: *See—*
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Baker, Earl W. Portable pipe thawer. 3,767,117, Cl. 239-136.000.

Baker, Lawrence Dee; and Bamber, George E. Portable display stand. 3,766,864, Cl. 108-111.000.

Baker, Philip G.; and Holmes, William C., to Polaroid Corporation. Unique prismatic element and mounting arrangement therefor. 3,767,293, Cl. 352-78.00r.

Baker, Wallace L. Cow controlling method. 3,766,890, Cl. 119-96.000.

Baki, Amos, to Litton Systems, Inc. Ship for transporting slurry ore, coal and oil. 3,766,875, Cl. 114-73.000.

Balin, Jay Z., to Kendall Company, The. Surgical drape with absorptive region. 3,766,913, Cl. 128-132.00d.

Ball Corporation: *See—*
Dollar, David L.; and Richardson, Garland D., 3,767,478.

Ball, David A., to Carrier Corporation. Air conditioning unit with condensate disposal. 3,766,751, Cl. 62-280.000.

Ball, Russell C., Jr.; and Denkowski, Walter J., to Philadelphia Gear Corporation. Valve operator with explosive cartridge. 3,766,803, Cl. 74-625.000.

Balston, W. & R., (Industrial) Limited: *See—*
Farrow, Roger M.; Kimber, Anthony B.; Colf, John Barrington; Miles, John Walter; and Griffiths, Graham Ernest, 3,767,054.

Baltimore Aircoil Company, Inc.: *See—*
Engalitcheff, John, Jr.; Bradley, Wilson E., Jr.; and Schinner, Edward N., 3,767,176.
Engalitcheff, John, Jr.; Bradley, Wilson E., Jr.; and Schinner, Edward N., 3,767,177.

Baltzer, Philip K., to RCA Corporation. Radiation resistant lithium ferrite cores. 3,767,581, Cl. 252-62.610.

Bamber, George E.: *See—*
Baker, Lawrence Dee; and Bamber, George E., 3,766,864.

Bandag Incorporated: *See—*
Meserve, P. Clayton, 3,766,690.

Banks, Robert L., to Phillips Petroleum Company. Preparation of high octane gasoline using disproportionation, alkylation and dimerization steps. 3,767,565, Cl. 208-93.000.

Bannister, Brian, to Upjohn Company, The. Process for making derivatives of lincomycin and its analogs. 3,767,649, Cl. 260-210.00r.

Banwarth, Robert F., to United States of America, Federal Bureau of Investigation. Fanfold card guide device with gravity held discharge chute. 3,767,024, Cl. 197-133.00r.

Barber, Gerald L. Plural inclined axes roundabout. 3,767,194, Cl. 272-51.000.

Bardwell, Francis G., to Stewart-Warner Corporation. Pattern contour tracing apparatus. 3,767,923, Cl. 250-202.00r.

Barker-Coleman Company: *See—*
Day, Donald W., 3,768,059.

Barlow, Alan; and Campbell, James Robert, to Smiths Industries, Limited. Mounting arrangements. 3,767,058, Cl. 211-41.000.

Barlow, Malcolm; and Lundquist, Jerry R., to Ampex Corporation. Duplex metallic overcoating. 3,767,369, Cl. 29-194.000.

Barnabei, Philip S.: *See—*
Durgin, George A.; and Barnabei, Philip S., 3,767,322.

Barter, Le Roy D., to Beckman Instruments, Inc. Digital integrator for evaluating operator selected portions of analog chart traces. 3,767,899, Cl. 235-61.60a.

Bates, James W., to Gulton Industries, Inc. Low frequency multi-phase sinewave generator circuit. 3,767,996, Cl. 321-9.00a.

Bates, James W., to Gulton Industries, Inc. Stepped sinusoidal-like waveform generating inverter circuit. 3,768,000, Cl. 321-27.0ms.

Batson, William A., to Singer Company, The. Remote mechanical switch for actuating a power tool with particular microswitch locating means. 3,767,876, Cl. 200-157.000.

Batson, William A., to Singer Company, The. Concentric assembly for portable electric router. 3,767,948, Cl. 310-50.000.

Battelle Memorial Institute: *See—*
Gross, Daniel, 3,767,288.

Battist, Lewis. Radiation monitoring system. 3,767,915, Cl. 250-366.000.

Batts, John H.: *See—*
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Batts, John Thomas, Inc.: *See—*
Garrison, Judd F.; and Batts, John H., 3,767,092.

Batzer, Hans; Lohse, Friedrich; and Schmid, Rolf, to Ciba-Geigy AG. Polycarboxylic acid curing agent for polyepoxide resin mixtures. 3,767,617, Cl. 260-47.0ea.

Bauer, George Thomas, to Xerox Corporation. Aperture fluorescent lamp for copying machines. 3,767,956, Cl. 313-109.000.

Baum, Edward J. Apparatus for removing pollutants from stack effluents. 3,766,971, Cl. 165-1.000.

Bavin, Lowell R., to Aro Corporation, The. Swivel filter. 3,767,053, Cl. 210-232.000.

Bayens, Charles A.; and Bjorklund, Ivan S., to Shell Oil Company. Apparatus and method for concentrating a two-phase gas-solid mixture for injection into a reactor. 3,766,661, Cl. 34-10.000.

Bayer Aktiengesellschaft: *See—*
Claussen, Uwe; Boehmke, Gunther; and Von Bonin, Wulf, 3,767,587.
Engelhard, Helmut; Rinkler, Heinrich-August; and Nischk, Gunther, 3,767,631.

Bayer, Helmut: *See—*
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Bayha, Jack E., to Cartrette, Inc., mesne. Commodity vendor apparatus. 3,767,084, Cl. 221-279.000.

Beal, Jack L., to Wells Plastics of California, Inc. Plastic micro-electronic packages. 3,767,839, Cl. 174-52.00s.

Beaton, John M.: *See—*
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Beaver-Advance Corporation: *See—*
Gorgei, Donald J.; Weisz, Daniel I.; and Cooper, Russell B., 3,767,031.

Beck, Robert W., to Esso Production Research Company. Mooring anchor. 3,766,877, Cl. 114-208.00r.

Becker, Gunter E.; and Santoro, Joseph F., to Xerox Corporation. Cleaning apparatus for insulating surfaces. 3,766,593, Cl. 15-308.000.

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Becton, Dickinson and Company: *See—*
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Behling, Roy A., Jr.: *See—*
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Beling, Thomas E., to Sigma Instruments Inc. Constant current power supply. 3,767,998, Cl. 321-18.000.

Bell, Joseph P. Automobile wheel light accessory. 3,767,909, Cl. 240-8.120.

Bell, Malcolm Charles Evert; and Pargeter, John Kenneth, to International Nickel Company, Inc., The. Refining copper pyrometallurgically by two-stage subatmospheric treatment. 3,767,383, Cl. 75-76.000.

Bell, Robert L. Automatic headlight control system for automobiles. 3,767,966, Cl. 315-83.000.

Bell Telephone Laboratories, Incorporated: *See—*
Berglund, Carl Neil, 3,767,983.
Chandross, Edwin Arthur; Tomlinson, Walter John, III; Ulrich, Reinhard; and Weber, Heinz Parl, 3,767,445.
Foley, Eugene Burdett, Jr.; MacRae, Alfred Urquhart; Simms, Douglas Leon; Polk, Norman Henry; and White, Clark Woody, 3,767,925.
Haskell, Barin Geoffrey; Limb, John Ormond; and Pease, Roger Fabian Wedgwood, 3,767,847.
Kasper, Horst Manfred; Shay, Joseph Leo; and Tell, Benjamin, 3,767,471.
MacRae, Alfred Urquhart; and Moline, Robert Alan, 3,767,492.
Ohm, Edward Allen, 3,768,039.
Pezzuiti, David August, 3,768,026.
Vroom, Walter Irving; and Westover, Robert Franklin, 3,767,757.

Bellas, Michael; and Seddon, William L., to Eastman Kodak Company. Preparation of manganese oxides. 3,767,780, Cl. 423-605.000.

Beloit Corporation: *See—*
Roerig, Arnold J., 3,766,620.

Belt, Verland W., to Josam Developments, Inc., mesne. Particle collector for cleaning gases. 3,766,717, Cl. 55-223.000.

Bemis Company, Inc.: *See—*
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Bendell, Sidney Leo; and Johnson, Cydney Ashley, to RCA Corporation. Automatic iris control. 3,767,853, Cl. 178-7.200.

Bendix Corporation, The: *See—*
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James, Robert L., 3,767,991.
Mueller, Rolf K.; and Carrico, John P., 3,767,914.

Beninga, Duane H.; and Gibbons, Hugh P., to Coors Porcelain Company. Organic resin glass composite and method for making same. 3,767,518, Cl. 161-146.000.

Benner, Lloyd Robert, to Armour and Company. Saw sharpening device. 3,766,806, Cl. 76-42.000.

Bennett, George A. Automatic electrode control. 3,767,832, Cl. 13-13.000.

Beres, Steven W.: *See—*
Steiman, Wolf; and Beres, Steven W., 3,767,086.

Berger, Isaac, to Carrier Corporation. Combination electric water heater and electric space heater. 3,767,894, Cl. 219-321.000.

Berger, Phill: *See—*
Storey, James S., 3,766,757.

Berger, Robert L.; and Holt, Alwin J., Jr., to Western Electric Company, Incorporated. Junction field effect transistor device for replacing a pentode. 3,767,946, Cl. 307-304.000.

Bergius, Rauno; Saivosalmi, Risto; and Niskanen, Hannu, to Valmet Oy. Motor sleigh. 3,766,999, Cl. 180-5.00r.

Berglund, Carl Neil, to Bell Telephone Laboratories, Incorporated. Charge transfer device with improved transfer efficiency. 3,767,983, Cl. 317-235.00r.

Bernardi, William A.: *See—*
Noble, Roger R.; and Bernardi, William A., 3,767,833.

Bersche, Fridolin L. Calendar attachment. 3,766,674, Cl. 40-113.000.

Bertagni, Jose Juan. Flat loudspeaker with enhanced low frequency. 3,767,005, Cl. 181-32.00r.
Berther, Clau: *See*—
Gabler, Rudolf; Studinka, Josef; Lussi, Heinz; and Berther, Clau, 3,767,609.
Bertolini Engineering Co., Inc.: *See*—
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Bertolini, William A., to Bertolini Engineering Co., Inc. Chassis with locking device. 3,767,255, Cl. 296-35.00a.
Besserdich, Orrin H.; and Crawford, Donald C., to FMC Corporation. Method of and apparatus for packaging flexible articles. 3,766,701, Cl. 53-26.000.
Bethlehem Steel Corporation: *See*—
Kern, David W.; and Stelts, Philip D., 3,766,772.
Biechler, Charles S.: *See*—
Richards, Sumner F., Jr.; and Biechler, Charles S., 3,766,693.
Bielefeldt, Irvin P., to Alco Standard Corporation. Furnace and method of using the same for reclaiming metal. 3,767,381, Cl. 75-63.000.
Bienert, Walter B.: *See*—
Pravda, Milton F.; and Bienert, Walter B., 3,766,977.
Big Schweizerische Industries-Gesellschaft: *See*—
Kopp, Georg, 3,767,189.
Biggerstaff, William L. Pivoting chair with pivotally displaceable seat and back. 3,767,190, Cl. 272-58.000.
Bikes, Robert L. F. Gun holder. 3,767,094, Cl. 224-1.00r.
Bingeman, Wilbur H.; Grimone, Frank H.; and Kerstetter, Donald R., to GTE Sylvania Incorporated. Electron discharge device having increased heater-cathode breakdown voltage. 3,767,958, Cl. 313-238.000.
Birchmeier, Hans P.: *See*—
Sharp, Richard S.; and Birchmeier, Hans P., 3,768,074.
Bishop, Stephen G.; and Moore, William J., to United States of America, Navy. Two-dimensional imaging array of chalocogenide glass bolometers. 3,767,928, Cl. 250-338.000.
Bittermann, Hans; Hausenblas, Albin; and Kammerl, Anton, to Siemens Aktiengesellschaft. Method for connection control in program controlled processing systems. 3,768,079, Cl. 340-172.500.
Bittner, John R.: *See*—
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Bizzigotti, Pio J.; and Charlton, John, to Sperry Rand Corporation. System for surveillance of ocean dumping. 3,768,098, Cl. 343-103.000.
Bjorklund, Ivan S.: *See*—
Bayens, Charles A.; and Bjorklund, Ivan S., 3,766,661.
Black and Decker Manufacturing Company, The: *See*—
Wickham, John L.; Wordsworth, Albert G.; and Huffaker, David L., 3,767,332.
Black, Millard G.; Nater, Robert A.; Rolston, Charles E.; Roberts, William H.; Hoover, Edward D.; Gunning, William F.; and King, Robert P., to Disney, Walt, Productions. Digital animation apparatus and methods. 3,767,901, Cl. 235-151.000.
Blades, Herbert, to Du Pont de Nemours, E. I., and Company. Dry-jet wet spinning process. 3,767,756, Cl. 264-184.000.
Blake, Pressley L.; and Johnson, Josiah D. Child's vehicle safety seat assembly. 3,767,259, Cl. 297-250.000.
Blanchard, Pierre: *See*—
Henry, Raymond; Sillard, Gilles; and Blanchard, Pierre, 3,768,044.
Blaser, Harry, to Von Roll A.G. Vibratory granulate compacting apparatus for block manufacture. 3,767,351, Cl. 425-432.000.
Blatter, Albert, to Bendix Corporation, The. Diaphragm valve logic element. 3,767,161, Cl. 251-61.100.
Bliss, Robert Thomas. Vasectomy prosthesis. 3,766,926, Cl. 128-346.000.
Blonde, Pierre, to Societe Anonyme dite: ORSYMONDE. Process for the production of lyophilized pharmaceutical compositions containing vitamin C. 3,767,807, Cl. 424-280.000.
Bloom, Carl, to Worthington Compressor and Engine International; division of Worthington Corporation. Centrifugal separator. 3,766,720, Cl. 55-461.000.
Blossom, Frank M. Labeling and feeding machine. 3,767,514, Cl. 156-518.000.
Blumcraft of Pittsburgh: *See*—
Horgan, William J., Jr., 3,767,236.
Horgan, William J., Jr., 3,767,239.
Board, Richard G. Game apparatus comprising superposable play selecting cards. 3,767,199, Cl. 273-93.00c.
Bober, Thomas W.; Dagon, Thomas J.; and Slovonsky, Idalee. Destruction of EDTA by alkaline chlorination. 3,767,572, Cl. 210-50.000.
Bodanszky, Miklos; Ondetti, Miguel A.; Vonsaltza, Malcolm H.; Narayanan, Venkatachala L.; and Levine, Seymour D., to Squibb, E. R., & Sons. Process for the preparation of secretin. 3,767,639, Cl. 260-112.500.
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Boeing Company, The: *See*—
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Boers, Franklin J. Hydraulic grapple and shear. 3,766,952, Cl. 144-34.00e.
Bogen, Wolfgang, GmbH, Firma: *See*—
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Boger, Klaus; Geng, Hellmuth R.; Gotze, Volkmar; and Hajdu, Johann, to International Business Machines Corporation. Device for address translation. 3,768,080, Cl. 340-172.500.
Boggs, Jesse K., to Esso Research and Engineering Company. Synthetic lube stocks. 3,767,577, Cl. 252-59.000.
Bogue, John C.: *See*—
Bogue, John C.; and Sarbacher, Robert I. (said Sarbacher assor. to said), 3,767,933.
Bogue, John C.; and Sarbacher, Robert I., said Sarbacher assor. to said Bogue, John C. Power supply having a plurality of power sources that are sequentially placed on load one at a time. 3,767,933, Cl. 307-48.000.
Bohnlein, Friedrich; and Stollmann, Georg, to Idra-Pressen G.m.b.H. Method of controlling the connection of the multiplier on the pressure Foston of a multiple pressure casting machine. 3,766,964, Cl. 164-120.000.
Bohoroquez, Luis A.; and Vindez, Pierre G., to Zephyr Manufacturing Co., Inc. Positive feed drill. 3,767,313, Cl. 408-14.000.
Boiko, Jury Nikolaevich: *See*—
Muzhavlev, Konstantin Dmitrievich; Kosarev, Sergei Petrovich; Khristjuk, Grigory Petrovich; Boiko, Jury Nikolaevich; Lebedev, Oleg Andreevich; and Yazev, Vladmir Dmitrievich, 3,767,556.
Boldebuck, Edith M., to General Electric Company. Method for improving the shelf life of polyamide acid dispersions for electrodeposition. 3,767,550, Cl. 204-181.000.
Boley, Robert A.: *See*—
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Booth, Frederick C., to Allied Chemical Corporation. Automatic locking seat belt retractor. 3,767,135, Cl. 242-107.400.
Borbas, Robert A.; Dufton, John P.; Duthie, Robert W.; Lighthall, John T.; Moorehead, Thomas J.; and Verbaas, George, to GTE Automatic Electric Laboratories Incorporated. Communication switching system with modular organization and bus. 3,767,863, Cl. 179-8.0es.
Bordenca, Carl, to SCM Corporation. Insect repellent articles. 3,767,785, Cl. 424-29.000.
Boretos, John W., to United States of America, Health, Education and Welfare. Device for treating sub-unqual hematoma. 3,766,923, Cl. 128-303.100.
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Borneman, Lawrence A.: *See*—
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Bottomley, Gary J.; Nichols, William M.; Watkins, Clyde E.; and Wilson, Larry T., to Johnson, Gordon, Company, mesne. Apparatus for eviscerating poultry. 3,766,602, Cl. 17-11.000.
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Bower, Arnold Boyd, Jr., to General Electric Company. Disc cutter for boring-type mining machine. 3,766,998, Cl. 175-373.000.
Bowker, John Kent, to Itek Corporation. Real time interferometer. 3,767,307, Cl. 356-109.000.
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Prucha, Richard V.; and Bowling, Teamus, 3,767,897.
Boyer, Ralph C. Batting practice device and method. 3,767,198, Cl. 273-26.00e.
Boyle, James E.: *See*—
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Brabec, Charles J.: *See*—
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Bradford, James Lewis, to Kerr-Mc Gee Chemical Corporation. Process for the recovery of iodine. 3,767,776, Cl. 423-435.000.
Bradley, Wilson E., Jr.: *See*—

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Engalitcheff, John, Jr.; Bradley, Wilson E., Jr.; and Schinner, Edward N., 3,767,177.

Brady, Paul G., to Universal Oil Products Company. Laminate of cotton paper core with resin fluorescent material scribed to expose core. 3,767,516, Cl. 161-2.000.

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Braid, Milton, to Mobil Oil Corporation. Oxidation resistant lubricant compositions. 3,767,575, Cl. 252-51.50r.

Brandestini, Antonio; Siegwart, Hans-Rudolf; and Welbergen, Gerard, said Siegwart and said Welbergen assor to said 2/3 interest to Brandestins, Antonio. Anchoring body for key anchoring tension members. 3,766,609, Cl. 24-126.000.

Brandestins, Antonio: *See—*
Brandestini, Antonio; Siegwart, Hans-Rudolf; and Welbergen, Gerard (said Siegwart and said Welbergen assor to said), 3,766,609.

Braun Aktiengesellschaft: *See—*
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Braun, Ernst: *See—*
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Braun, Gert; and Braun, Ernst, to Halbach & Braun. Planer drive system. 3,766,792, Cl. 74-243.00h.

Brehm, Ronald Carl; Long, Robert Alvin; and Over, William Roderick, to AMP Incorporated. Automatic apparatus for attaching wires to terminals. 3,766,622, Cl. 29-203.0mw.

Brenner, Siegfried; and Muz, Erwin. Machine for the application of liquid coatings to workpieces. 3,766,885, Cl. 118-313.000.

Breslow, Jeffrey D., to Glass, Marvin, & Associates. Game using answer cubes and receptacle therefor. 3,767,197, Cl. 273-1.00r.

Bressler, Wilbur Lee: *See—*
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Brichard, Edgard; Declaye, Joseph; and Autequitte, Jean, to Glaverbel. Refractory furnace tank walls. 3,767,375, Cl. 65-182.00r.

Bridgeport Machines, Inc.: *See—*
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Briggs & Stratton Corporation: *See—*
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Briggs, Aubrey C.; and Behling, Roy A., Jr., to Dravo Corporation. Stacker-reclaimer material handling unit. 3,767,030, Cl. 198-36.000.

Briggs, Aubrey C., to Dravo Corporation. Bucket assembly for use in a material handling apparatus. 3,767,060, Cl. 212-81.000.

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Bronca, Gaston; Pouillange, Jean-Paul; and Hlasnik, Ivan, to Commissariat a l'Energie Atomique. Super conducting cable of elimental conductors in a metal matrix within a metallic jacket. 3,767,842, Cl. 174-128.000.

Bronne, William B.: *See—*
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Bronstert, Klaus: *See—*
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Broughton Corporation: *See—*
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Brown & Root: *See—*
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Brown, Albert D.; and Tygart, William R., to Lockheed Aircraft Corporation. Visual surface guidance apparatus. 3,767,309, Cl. 356-138.000.

Brown, Arlie L.: *See—*
Brown, Paul I.; and Brown, Arlie L., 3,767,300.

Brown Brothers & Company Limited: *See—*
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Brown, Bruce B., to United States of America, Navy. Multi-ring hydraulic seal for irregular bore surfaces. 3,767,215, Cl. 277-125.000.

Brown, Cicero C. Electric power swivel and system for use in rotary well drilling. 3,766,991, Cl. 173-20.000.

Brown, Edgar D., Jr., to General Electric Company. Lubricating compositions containing halogen and alkoxy, acyloxy, or hydroxy groups. 3,767,576, Cl. 252-54.600.

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Brown, Kenneth H.; and Kline, Arthur J., Jr., to Motorola, Inc. Automatic signal acquisition means for phase-lock loop with anti-sideband lock protection. 3,768,030, Cl. 331-12.000.

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Brown, Robert J., to Esso Production Research Company. Underwater pipeline installation. 3,766,743, Cl. 61-72.300.

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Bruson, Herman A.; and Gould, Henry, to Milchem Incorporated. Detergent builder. 3,767,598, Cl. 252-545.000.

Brust, David Philip; and Kane, Grace Eileen, to Eastman Kodak Company. Photographic hydrophilic colloids and method of coating. 3,767,410, Cl. 96-94.000.

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Buchholz, Bernard, to Pennwalt Corporation. Polymeric tin mercaptide stabilizers for vinyl halide polymers. 3,767,614, Cl. 260-45.75k.

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Buhler, Karl; and Floessel, Dieter, to Aktiengesellschaft Brown, Boveri & Cie. Release device for electrical switches. 3,768,052, Cl. 335-190.000.

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Burke, Patrick Michael, to Du Pont de Nemours, E. I., and Company. Dialkyl N-substituted phosphoramidate containing flame retardants. 3,767,736, Cl. 260-950.000.

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Consolidated Gold Fields Limited: *See—*
Nixon, Philip John; and Prosser, Alan Philip, 3,767,384.

Consolidated Papers, Inc.: *See—*
Chao, Henry H.; and Horner, Michael G., 3,767,900.

Continental Can Company, Inc.: *See—*
Armstrong, Thaddeus J.; and Ohlhaver, Jon, 3,767,892.
Ganz, Robert H., 3,766,704.
Schneider, Julius L., 3,767,607.

Continental Oil Company: *See—*
Fertl, Walter H.; and Hillhouse, John L., 3,766,993.
Fertl, Walter H., 3,766,994.
Fonseca, Anthony G.; and Every, Richard L., 3,767,738.

Contour Saws, Inc.: *See—*
Cremisio, Richard S. and Brabec, Charles J., 3,766,808.

Conwed Corporation: *See—*
Gaffney, Bernard J., 3,767,353.

Cook, Elton S.; and Nutini, Leo G., to Stanley Drug Products, Inc. Method for controlling the toxicity of drug products. 3,767,792, Cl. 424-95.000.

Cook, Gary L., to Solid State Products, Inc. Impact resistant fluorescent lantern. 3,767,904, Cl. 240-11.20r.

Cooper, Albert S., Jr.: *See—*
Calamari, Timothy A., Jr.; Reeves, Wilson A.; Schrieber, Sidney P.; and Cooper, Albert S., Jr., 3,767,359.

Cooper, Glenn D., to General Electric Company. Process for the preparation of poly(dihalophenylene) ethers. 3,767,619, Cl. 260-47.0et.

Cooper, Russell B.: *See—*
Gorgei, Donald J.; Weisz, Daniel I.; and Cooper, Russell B., 3,767,031.

Cooper, Thomas A.: *See—*
Youngblood, Douglas J.; Cooper, Thomas A.; and Colvert, James H., 3,767,564.

Coors Porcelain Company: *See—*
Beninga, Duane H.; and Gibbons, Hugh P., 3,767,518.

Copeland, Henry A. Polishing composition. 3,767,431, Cl. 106-8.000.

Copolymer Rubber & Chemical Corporation: *See—*
Gerlicher, Robert A., 3,767,605.

Coppens, Matheus Johannes Martinus, to Koninklijke Emballage Industrie Van Leer N.V. Device for filling a container of the disposal type with a gas. 3,766,705, Cl. 53-88.000.

Coran, Aubert Y.; and Swaney, Larry R., to Monsanto Company. Producing ordered composites by application of magnetic forces. 3,767,505, Cl. 156-276.000.

Cordon, Martin; and Pintenich, Brian J., to Colgate-Palmolive Company. Dental cream containing abrasive agglomerates. 3,767,791, Cl. 424-49.000.

Cords, Ernest, to Hughes Aircraft Company. Modular airborne launcher. 3,766,828, Cl. 89-1.800.

Cords, Ernest, to Highes Aircraft Company. Modular airborne launcher. 3,766,829, Cl. 89-1.815.

Corelli, Olga V.: *See—*
Corelli, Robert; and Corelli, Olga V., 3,767,246.

Corelli, Robert; and Corelli, Olga V. Sanitary disposal apparatus. 3,767,246, Cl. 294-19.00r.

Cornelius Company, The, mesne: *See—*
Swick, George E., Jr.; and Danielson, Ellsworth H., 3,766,863.

Corning Glass Works: *See—*
Havewala, Noshir B.; and Weetall, Howard H., 3,767,535.

Coscia, Giovanni A., to Societe Generale Conseil So. Ge. Co. Apparatus for deflashing molded articles. 3,767,096, Cl. 325-97.000.

Costanzo, James Joseph, to GTE Automatic Electric Laboratories Incorporated. Jack strip gage. 3,768,089, Cl. 340-282.00r.

Coty, Vernon F.; and Leavitt, Richard I., to Mobil Oil Corporation. Method for producing hydrocarbon-utilizing yeasts. 3,767,527, Cl. 195-28.00r.

Coughlin, Leonard J.: *See—*
Hjermstad, Erling T.; and Coughlin, Leonard J., 3,767,604.

Cowe, Peter Lyndon: *See—*
Claridge, Maurice Arthur; and Cowe, Peter Lyndon, 3,767,455.

Cowles, Walter C., to Esso Research and Engineering Company. Container for liquefied gases at cryogenic temperatures. 3,766,876, Cl. 114-74.00a.

Cox, David Alexander: *See—*
Leeming, Peter Rodway; Cross, Peter Edward; Cox, David Alexander; and Augstein, Joachim, 3,767,819.

Cox, Robert J.: *See—*
Aviram, Arieh; Cox, Robert J.; and Young, William R., 3,767,289.

Cozzens, Jerold E., to Ray-Ban Solarscreen, Inc. Head covering having metallic reflecting surface. 3,766,565, Cl. 2-200.000.

Cozzy, Thomas W.; and Pettinga, Robert, to General Electric Company. Bolt assembly having a collar rotatable thereon to activate the bolt lock and sear the firing pin. 3,766,821, Cl. 89-12.000.

Cranston, Benjamin Howell, to Western Electric Company, Incorporated. Explosive bonding of workpieces. 3,766,635, Cl. 29-472.900.

Craven, Jack L., to Electro-Photo Systems, Inc. Retro-reflex viewer for detecting counterfeit identity cards. 3,767,305, Cl. 356-71.000.

Crawford, Donald C.: *See—*
Besserdich, Orrin H.; and Crawford, Donald C., 3,766,701.

Crawford, Richard D., to Hewlett-Packard Company. Turn-off circuit for switching transistor. 3,767,941, Cl. 307-263.000.

Creemers, Henricus M. J. C., to Stamicarbon N.V. Process for preparing alkenyl norbornenes. 3,767,717, Cl. 260-666.0py.

Cremisio, Richard S.; and Brabec, Charles J., to Contour Saws, Inc. Bimetal saw blade stock and method of making the same. 3,766,808, Cl. 76-112.000.

Cronin, John C.; and Depcrymski, John J., to I-T-E Imperial Corporation. Non-metallic corona shield for gas-insulated electrical equipment and the like. 3,767,840, Cl. 174-73.00r.

Cross, Peter Edward: *See—*
Leeming, Peter Rodway; Cross, Peter Edward; Cox, David Alexander; and Augstein, Joachim, 3,767,819.

Crowdy, Edmund Porter, to Hawthorn, Leslie (Engineers), Limited. Apparatus for supporting machines. 3,767,148, Cl. 248-25.000.

Cruz, Mamerto M., Jr., to Avicon, Inc., mesne. Phosthetic structures derived from collagen. 3,767,437, Cl. 106-161.000.

Csathy, Denis G.; Hung, Wendell L. Y.; Rehoski, Charles J.; and Heath, Jon M., to Deltak Corporation, mesne. Heat recovery muffler for internal combustion engines. 3,766,891, Cl. 122-7.00r.

Cugini, Edward T.: *See—*
Orund, Valdek J.; and Cugini, Edward T., 3,766,978.

Cunningham, Jack W.; Foster, E. Gordon; and Vanderwater, Robert G., to Shell Oil Company. Secondary removal of inerts in ethylene oxide purification. 3,766,714, Cl. 55-48.000.

Curlator Corporation: *See—*
Jendl, Wilhelm; and Krosswang, Kurt, 3,766,607.

Curtis, James H., to General Electric Company. Anodized film for electrolytic capacitor and method for preparation thereof. 3,767,541, Cl. 204-56.00r.

Curtis, William R.; and Trimble, David C., to Hercules Incorporated. Plastic spring assembly connected to wire frame. 3,766,580, Cl. 5-351.000.

Cusic, John W.; and Deason, James R., to Searle, G. D., & Co. 2-((Estra-1,3,5 (10)-trien-2-yl)thio)-2-methylpropionic acid derivatives. 3,767,683, Cl. 260-397.100.

Cutler, Murray J. Protective shield device. 3,766,865, Cl. 109-49.500.

Cutter Laboratories, Inc.: *See—*
Kahn, Paul; and Brown, Ronald C., 3,766,567.

Cyphelly, Ivan Jaroslav. Hydrostatic shaft seal. 3,767,213, Cl. 277-30.000.

Czuszak, Charles C., to Carrier Corporation. High exhaust pressure trip mechanism for turbines. 3,767,319, Cl. 415-17.000.

Dagon, Thomas J.: *See—*
Bober, Thomas W.; Dagon, Thomas J.; and Slovonsky, Idalee, 3,767,572.

Dahlgren, Victor F.: *See—*
Tally, Sidney K.; and Dahlgren, Victor F., 3,767,500.

Daicel, Ltd.: *See—*
Ishii, Kiyoshi; Konomi, Shobu; and Ishiguro, Yoshio, 3,767,502.

Daihatsu Kogyo Co., Ltd.: *See—*
Furusho, Hirosuke; and Fukui, Shigetaka, 3,767,227.

Dalco Packaging Corporation: *See—*
Congleton, Wayne, 3,767,110.

Dall'Asta, Gino; Carbonaro, Antonio; Borghi, Italo; and Greco, Alberto, to Goodrich, B. F., Company, The. Process for the preparation of linear, high molecular weight, sulphur vulcanizable copolymer of ethylene, propylene and 1,3-butadiene and catalyst sysems used therein. 3,767,630, Cl. 260-80.700.

Dallen, John A., to Standard Products Company, The. Means for preventing panel roll out in a panel mounting system. 3,766,698, Cl. 52-400.000.

Dalske, Jewelle M.: *See—*
Dalske, Sylvester A.; and Dalske, Jewelle M., 3,767,091.

Dalske, Sylvester A.; and Dalske, Jewelle M. Device to ruffle or pleat material. 3,767,091, Cl. 223-32.000.

Damas Jens Nielsens Maskinfabrik A/S: *See—*
Rasmussen, Svend Jorgen, 3,767,047.

D'Amato, Joseph: *See—*
Bunting, Robert L., Jr.; Ring, Theodore C.; D'Amato, Joseph; and Wojcik, Witold M., 3,766,961.

Dammann, Hans, to U.S. Philips Corporation. Method of manufacturing a hologram by means of nonlinear recording materials. 3,767,284, Cl. 350-3.500.

Dana Corporation: *See—*
Shea, Dennis W.; and Stoneman, William C., 3,766,805.

Dance, Arthur, to Townson & Coxson Limited. Tubular valve or other housing having an outwardly-extending flange engageable by an inwardly-flanged, internally screw-threaded connecting ring. 3,767,166, Cl. 251-366.000.

Danfoss A/S: *See—*
Jensen, Arne, 3,767,988.

Kraemer, Asger, 3,766,833.
Kraemer, Asger, 3,766,834.

Daniel Industries, Inc.: *See—*
Mueller, Allen Howard, 3,768,006.

Daniel, John H., Jr., to Commercial Solvents Corporation. Dust-free polyols. 3,767,712, Cl. 260-615.00r.

Daniels, E. Robert. Orthopedic traction table. 3,766,912, Cl. 128-71.000.

Danielson, Ellsworth H.: *See—*
Swick, George E., Jr.; and Danielson, Ellsworth H., 3,766,863.

Danilewicz, John Christopher; and Szelke, Michael, to Pfizer Inc. Antihypectensine N-(3-chlorobenzenesulfonyl) acetamidines. 3,767,815, Cl. 424-321.000.

Darms, Ronald: *See—*
Angelo, Rudolph J.; Darms, Ronald; and Wysong, Robert D., 3,767,620.

Davidson, Julian S.: *See—*
Reinhart, Joan; Stump, Warren E.; and Davidson, Julian S., 3,767,489.

Davis, Jack. Nailing machine. 3,767,100, Cl. 227-152.000.

Davis, James L.: *See—*
Aby, John F.; and Davis, James L., 3,766,817.

Davis, James Martin: *See—*
Campbell, Kenneth C.; Davis, James Martin; and Woods, Robert E., Jr., 3,767,642.

Davis, Joseph T. Sectional interior concrete form. 3,767,157, Cl. 249-186.000.

Davis, Lynn M.: *See—*
Theis, James V., Jr.; and Davis, Lynn M., 3,767,320.

Davis, Roy Forrest, Jr. Pressure and vacuum relief valve. 3,766,941, Cl. 137-493.400.

Davis, Walter P., to Radiant Devices Incorporated. Method of making an electric radiant heating panel. 3,766,644, Cl. 29-611.000.

Day, Christopher C., to American Optical Corporation. Digital CRT system for displaying a precessing waveform and its derivative. 3,768,093, Cl. 340-324.00a.

Day, Donald W., to Barker-Coleman Company. Ambient compensated solar sensor. 3,768,059, Cl. 338-25.000.

Day, Job H.: *See—*
Schneikart, Paul E.; Murdock, Roy C.; and Day, Job H., 3,767,875.

De Greef, Jan Antoon, to De Greef's Wagen-Carrosserie-en Machinebouw N.V. Apparatus for emptying a crate filled with fruit. 3,767,073, Cl. 214-307.000.

De Greef's Wagen-Carrosserie-en Machinebouw N.V.: *See—*
De Greef, Jan Antoon, 3,767,073.

De Grella, Richard J., Jr.; and Schrader, Paul D., to General Electric Company. Control circuit for heating and cooling apparatus. 3,766,973, Cl. 165-26.000.

De Long, Cecil W.: *See—*
Rehklau, George D.; and De Long, Cecil W., 3,767,206.

De Marco, Thomas M.: *See—*
Dupre, George T.; and De Marco, Thomas M., 3,767,168.

De Nobel, Dirk: *See—*
Kock, Hendrikus Gerardus; De Nobel, Dirk; and Tijburg, Rudolf Paulus, 3,767,482.

De Puy, Seymour M.; Folsom, William J.; and Bittner, John R., to General Electric Company. Rebound motion controlling apparatus. 3,766,852, Cl. 101-93.00c.

De Sloovere, Bernard G., to General Motors Corporation. Gearshift mechanism. 3,766,799, Cl. 74-473.00a.

De Stevens, George: *See—*
Carney, Richard William James; and De Stevens, George, 3,767,805.

De Vries, Charles V. Trailer positioning and maneuvering apparatus. 3,767,230, Cl. 280-477.000.

Deacon, Martin John; and Kindleysides, Leslie, to Lever Brothers Company. Method of making a collagen-coated sausage. 3,767,821, Cl. 426-276.000.

Dean, Clarence T., III, 20% to Lee, Raymond, Organization, Inc., The. Decorative lights. 3,767,903, Cl. 240-10.00r.

Deangelis, George G., to Preferred Utilities Manufacturing Corporation. Burning apparatus and method. 3,766,867, Cl. 110-8.00r.

Deason, James R.: *See—*
Cusic, John W.; and Deason, James R., 3,767,683.

Decker, Saul M.: *See—*
Horowitz, Harvey M.; Decker, Saul M.; and McMann, Renville H., 3,767,852.

Declaye, Joseph: *See—*
Brichard, Edgard; Declaye, Joseph; and Autequitte, Jean, 3,767,375.

Deems, Ronald Wesley: *See—*
Adair, James Richard; and Deems, Ronald Wesley, 3,766,761.

Deguchi, Shinichi: *See—*
Fujita, Isamu; Tani, Hisashi; and Deguchi, Shinichi, 3,767,648.

Del Ciello, Robert R., to Motorola, Inc. Power regulator having rapid turn-on circuit. 3,767,997, Cl. 321-18.000.

Del Rosso, Victor, to Hi-Speed Checkweigher Co. Package inverter. 3,767,028, Cl. 198-33.0ac.

Delatronchetta, Claude; Helion, Raymond; Gunthart, Rene; and Meissner, Andre, to Elf Union and Ateliers des Charmilles S.A. and Chatelaine-Geneve (Swisse). System for supplying an emulsion of liquid fuel and water to a heating burner. 3,766,942, Cl. 137-56.000.

Delaux, Robert Daniel: *See—*
Champieboux, Jacques Joseph; and Delaux, Robert Daniel, 3,766,949.

Delmar Chemicals, Limited: *See—*
Podesva, Ctirad; and Scott, William T., 3,767,670.

Deltak Corporation, mesne: *See—*
Csathy, Denis G.; Hung, Wendell L. Y.; Rehoski, Charles J.; and Heath, Jon M., 3,766,891.

Deming, Andrew F., to Alliance Manufacturing Company, Inc. Transmitter-receiver alignment system and method. 3,768,018, Cl. 325-67.000.

Denki Onkyo Company, Limited: *See—*
Shimizu, Masao, 3,766,615.

Denkowski, Walter J.: *See—*
Ball, Russell C., Jr.; and Denkowski, Walter J., 3,766,803.

Dennison Manufacturing Company: *See—*
Fay, Robert B., 3,766,608.

Denss, Rolf; Clauson-Kaas, Niels; and Ostermayer, Franz. Substituted esters of phenyl acetic acids. 3,767,802, Cl. 424-244.000.

Dentino, Mauro J., to North American Rockwell Corporation. Focusing control of synthetic aperture processing for sidelooking radar. 3,768,096, Cl. 343-7.00a.

Depcrymski, John J.: *See—*
Cronin, John C.; and Depcrymski, John J., 3,767,840.

Desai, Prakash D.: *See—*
Spachner, Sheldon A.; and Desai, Prakash D., 3,766,771.

Deseret Pharmaceutical Company, Inc.: *See—*
Moorehead, Harvey; Reading, George R.; and Smith, Silas S., 3,766,916.

Desselere, Jean-Pierre: *See—*
Ayel, Michel; Desselere, Jean-Pierre; and Lambert, Bernard, 3,767,473.

Detroit Lime Company: *See—*
Parsons, Marshall F., 3,766,663.

Deussen, Werner. Dosing closure. 3,767,088, Cl. 222-205.000.

Deutsche Babcock & Wilcox A.G.: *See—*
Reh, Lothar; and Melzer, Carl-August, 3,767,768.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Giesselmann, Gunter; Schreyer, Gerd; and Weigert, Wolfgang, 3,767,778.
Posselt, Klaus; and Offermanns, Heribert, 3,767,675.

Devlieg Machine Company: *See—*
Ortlieb, Robert M., 3,767,317.

Dewaele, Sylvain A. R.: *See—*
Dulog, Lothar G.; and Dewaele, Sylvain A. R., 3,767,733.

Diamond International Corporation: *See—*
Reifers, Richard F., 3,767,103.

Diamond, Julius; and Douglas, George H., to Rorer, William H., Inc. S-triazines. 3,767,656, Cl. 260-249.900.

Diamond Shamrock Corporation: *See—*
Cardarelli, Nathan F., 3,767,809.
Carlson, Richard S., 3,767,542.
Dietrich, Joseph J., 3,767,633.
Olix, Donald J., 3,767,440.

Diamond Tool & Die Company: *See—*
Driscoll, James R.; Clark, Earl E.; and Haas, Thomas J., 3,767,340.

Diano, Peter R.: *See—*
Peil, William; Diano, Peter R.; Marton, Roland M.; and Watkins, Brian J., 3,768,061.

Dick, A. B., Company: *See—*
Gallagher, John P.; Tonkin, Kenneth J.; and Borneman, Lawrence A., 3,766,853.

Dick, Franklin; and Seckel, Peter H. Extruded fibrous liquid reservoir and method of making same. 3,767,520, Cl. 161-175.000.

Dickopp, Gerhard: *See—*
Schuller, Eduard; Dickopp, Gerhard; Rainer, Wolfgang; Redlich, Horst; and Klemp, Hans-Joachim, 3,767,848.
Schuller, Eduard; Dickopp, Gerhard; and Rainer, Wolfgang, 3,767,865.

Dickson, Le Roy David, to International Business Machines Corporation. Diffraction grating beam splitter. 3,767,310, Cl. 356-218.000.

Didik, Frank T. Planetime clock. 3,766,727, Cl. 58-3.000.

Die Cast and Forge Company, Inc., mesne: *See—*
Giannuzzi, Louis N., 3,766,819.

Diersbock, Gunther Rudolph, to Timex Corporation. Quartz controlled chronometer. 3,766,729, Cl. 58-23.00d.

Dietrich, Gary L.: *See—*
Harper, James W.; and Dietrich, Gary L., 3,767,201.

Dietrich, Joseph J., to Diamond Shamrock Corporation. High temperature polymerization process and vinyl chloride polymer products therefrom. 3,767,633, Cl. 260-87.100.

Dillard, John W.; Tringali, Dominick; Swartz, Richard L.; and Hinson, Ernest M., Jr. Automatic article sorting and punching machine. 3,767,113, Cl. 234-40.000.

Dillman, Richard F.; Larsen, James L.; and Nardizzi, Alfred M., to Hewlett-Packard Company. Electrocardiograph telemetry system having circuitry for indicating inoperative conditions. 3,768,017, Cl. 325-48.000.

Dimick, Keene Paul, to Lifecycles, Inc. Programmed bicycle exerciser. 3,767,195, Cl. 272-73.000.

Dimmer, Robert P., to GTE Automatic Electric Laboratories, Incorporated. 3 to 10 port conference circuit. 3,767,861, Cl. 179-1.0cn.

Dinkel, Anton H. Constructional assembly, e.g. for constructing buildings, containers and vehicle bodies. 3,766,699, Cl. 52-592.000.

Disney, Walt, Productions: *See—*
Black, Millard G.; Nater, Robert A.; Rolston, Charles E.; Roberts, William H.; Hoover, Edward D.; Gunning, William F.; and King, Robert P., 3,767,901.
Distler, Josef, to Rexroth, G. L., G.m.b.H. Pilot controlled fluid flow regulating valve. 3,766,944, Cl. 137-625.600.
Dittmar, Wilfried; Lambrette, Jurgen; and Schatz, Hermann, to Varta Aktiengesellschaft. Circuit arrangement for rapid charging of storage batteries. 3,767,994, Cl. 320-20.000.
Dix, James S.; and Reed, Jerry O., to Phillips Petroleum Company. Carbon black pigmented flame retardant thermoplastic polymer compositions stabilized against degradation at polymer melt temperatures. 3,767,613, Cl. 260-41.00b.
Dlak, Frederick Robert: *See—*
Anderson, Leslie Alan; Dlak, Frederick Robert; Foster, George Hails, Jr.; and Gentry, John Maury, 3,767,841.
Docutel Corporation: *See—*
Henson, Bryan K., 3,766,687.
Dodds, Thomas J., Jr.; and Gibson, Harold F., to Burroughs Corporation. Graphic display apparatus. 3,768,092, Cl. 340-324.00a.
Doering, William E.; and Jensen, Willis J., to Chemetron Corporation. Hospital communication system. 3,767,859, Cl. 179-1.00h.
Doherty, Thomas E.: *See—*
Amberg, Stephen W.; Doherty, Thomas E.; Karabedian, James A.; and Heyne, Clarence A., 3,767,496.
Dohnalik, Joseph J., to Garden City Envelope Company. Machines for making envelopes. 3,767,184, Cl. 271-2.000.
Dolbear, Geoffrey E., to Grace, W. R., & Co. System for removing nitrogen oxide from automotive exhaust. 3,767,764, Cl. 423-213.200.
Dollar, David L.; and Richardson, Garland D., to Ball Corporation. Method for producing patina on a zinc surface and article so formed. 3,767,478, Cl. 148-6.15z.
Donnelly, Thomas G.; Haueter, James A.; Krisko, William J.; Schoen, Donald W.; and Lind, Chester S., to United States of America, Army, mesne. Protective system for contaminated atmosphere. 3,766,844, Cl. 98-33.00r.
Donovan, Daniel Joseph, Jr.; and Card, Charles Edward, Jr., to Cogar Corporation. Insertion and extraction lever for printed circuit cards. 3,767,974, Cl. 317-101.0ph.
Donovan, Gerard H.: *See—*
Folsom, Lawrence R.; Gardy, Victor R.; and Donovan, Gerard H., 3,766,823.
Donovan, Richard D.: *See—*
Snover, John A.; and Donovan, Richard D., 3,767,715.
Donovan, Thomas S.; and Surash, John J., to Eastman Kodak Company. Method of preparing an aqueous solution of a water-soluble salt of a ferric aminopolycarboxylic acid complex. 3,767,689, Cl. 260-439.00r.
Doomori, Yoshiki: *See—*
Tatara, Seiji; Morita, Yasuo; Doomori, Yoshiki; Kumoda, Masasi; Iwaki, Yoshikazu; and Fujishima, Teruyuki, 3,767,775.
Dorey, Howard Anthony; and Metcalf, Eric, to Solartron Electronic Group Limited, The. Mark-space analogue to digital converters. 3,768,009, Cl. 324-99.00d.
Dorflinger, Max F., to USM Corporation. Process of making self-locking threaded inserts. 3,766,584, Cl. 10-86.00r.
Dorschner, Kenneth P.: *See—*
Albright, James A.; and Dorschner, Kenneth P., 3,767,699.
Dorschnerl, Kenneth P.; and Albright, James A., to SCM Corporation. Phenyl nitrone-containing compositions useful as anti-microbial agents. 3,767,818, Cl. 424-33.00d.
Doughty, Robert L.; and Wheeler, Clayton A., to Monsanto Company. Double parison die head control mechanism. 3,767,345, Cl. 425-326.000.
Douglas, George H.: *See—*
Diamond, Julius; and Douglas, George H., 3,767,656.
Dow Chemical Company: *See—*
Habermann, Clarence E.; and Tefertiller, Ben A., 3,767,706.
Dow Chemical Company, The: *See—*
Abdallah, Aboulmuniem H., 3,767,810.
Clarke, James A., 3,767,624.
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Dow Corning Corporation: *See—*
Muenzer, Robert W., 3,766,907.
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Dowling, John B.: *See—*
Rawson, Edward B.; Murphy, William J., Jr.; Schwarzkope, Daniel B.; and Dowling, John B., 3,768,073.
Downey, Roger B., to Polaroid Corporation. Motion picture processing and projection system employing multi-purpose cassette. 3,767,297, Cl. 352-130.000.
Drapeau, Yves: *See—*
Kennel, Michael; and Drapeau, Yves, 3,767,460.
Dravo Corporation: *See—*
Briggs, Aubrey C.; and Behling, Roy A., Jr., 3,767,030.
Briggs, Aubrey C., 3,767,060.
Drechsel, Erhart K.: *See—*
Worthington, Ralph Eric; Thompson, William Henry; Somers, Thomas Noel Enda; and Drechsel, Erhart K., 3,767,770.
Dreier, William M., Jr.: *See—*
Golstad, Clayton O.; Heilke, Timothy C.; and Dreier, William M., Jr., 3,767,421.
Dreisin, Alexander, to Allis-Chalmers Corporation. Fuel injection nozzle holder seal. 3,767,123, Cl. 239-533.000.
Dresser Industries, Inc.: *See—*
Eckman, Richard E.; and Mitchell, James C., 3,766,990.
Young, James W.; and Arrington, Thomas L., 3,766,995.
Drexler, Karl F.; and Winchester, Robert L., to General Electric Company. Generator excitation system with rotating electromagnetic energy converter and internal winding power source. 3,768,002, Cl. 322-25.000.
Drinkard, William Charles, Jr., to Du Pont de Nemours, E. I., and Company. Selective hydrogenation of aromatic hydrocarbons to cycloolefins. 3,767,720, Cl. 260-667.000.
Driscoll, James R.; Clark, Earl E.; and Haas, Thomas J., to Diamond Tool & Die Company. Sprue bushing for a single cavity or center sprued mold. 3,767,340, Cl. 425-146.000.
Drone, Gary A., to Allis-Chalmers Corporation. Filter system for crawler tractor final drives. 3,767,014, Cl. 184-6.120.
Drzewiecki, Tadeusz M.; and Goto, John M., to United States of America, Army. Extended duration fluidic time delay device. 3,766,733, Cl. 60-36.000.
Du Pont de Nemours, E. I., and Company: *See—*
Angelo, Rudolph J.; Darms, Ronald; and Wysong, Robert D., 3,767,620.
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Drinkard, William Charles, Jr., 3,767,720.
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Duffy, Donald E., to General Electric Company. Method and apparatus for sensing surface displacement orthogonal to the line of sight. 3,767,308, Cl. 356-109.000.
Dufour, Henri: *See—*
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Dulle, Bernard A., to Procter & Gamble Company, The. Proximal apex tampon. 3,766,921, Cl. 128-263.000.
Dulog, Lothar G.; and Dewaele, Sylvain A. R., to S.A. Texaco Belgium N.V. Genzo-(1,3,2-) dioxaphospholes. 3,767,733, Cl. 260-937.000.
Dumas, Christ J.; and Simovits, Stephen S., Jr., to American Plasticraft Company. Electron tube socket. 3,767,951, Cl. 313-51.000.
Dumont, Walter M., Jr. Line boring bar assembly. 3,767,316, Cl. 408-79.000.
Duncan, David M.: *See—*
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Jones-Hinton, James; and Gray, Thomas E. H., 3,767,740.
Dunmire, Paul E. Small volume transit-mix. 3,767,171, Cl. 259-177.00a.
Dupre, George T.; and De Marco, Thomas M., to National Foundry Equipment Company, Inc. Mechanical agitation apparatus. 3,767,168, Cl. 259-72.000.
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Dynamics Corporation of America: *See—*
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Tuma, Rudolf; and Lebender, Rotraud, 3,767,801.

E-Z-EM Company, Inc.: *See—*
Greene, Franklin R., 3,766,920.

Eaker, Cecil E. Combination jigsaw puzzle and container set. 3,767,203, Cl. 273-157.00r.

Earle, Ernest L., Jr.; Pitchon, Esra; Schulman, Marvin; and Prasad, Ravi, to General Foods Corporation. Process for fixing volatile enhancers in sucrose. 3,767,430, Cl. 426-380.000.

Earle, Paul Lewis; Musz, Andrew; and Vandervelden, Jan Jozef Maria, to Johns-Manville Corporation. Method of forming a textured surface on a deformable sheet. 3,767,746, Cl. 264-69.000.

Eastman Kodak Company: *See—*
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Bellas, Michael; and Seddon, William L., 3,767,780.
Brust, David Philip; and Kane, Grace Eileen, 3,767,410.
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Eck, Herbert; Hannebaum, Manfred; Heckmaier, Joseph; and Spes, Hellmuth, to Wacker-Chemie G.m.b.H. Process for producing N-methyl-N-vinyl acetamide. 3,767,705, Cl. 260-561.00r.

Eckey, Horst, to Greenside Machine Company Limited. Road working machines. 3,767,264, Cl. 299-39.000.

Eckman, Richard E.; and Mitchell, James C., to Dresser Industries, Inc. Low torque automatic screwdriver. 3,766,990, Cl. 173-12.000.

Eddy Match Company Limited: *See—*
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Eder, Erich, to Kronseder, Hermann. Label extractor with swinging transfer members. 3,767,515, Cl. 156-568.000.

Edixhoven, Gerardus Hendrikus, to Hunter Douglas International N.V. Apparatus for forming strip. 3,766,815, Cl. 83-160.000.

Edwards, Evan A., to Eastman Kodak Company. Device for winding a filmstrip. 3,767,132, Cl. 242-71.200.

Edwards, Harrison F.; and Bottorf, Stewart F., to Lewis Engineering Company, The. Servo apparatus. 3,767,992, Cl. 318-640.000.

Effinger, Cecil S. Free platen typewriter. 3,767,023, Cl. 197-127.00r.

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Egurbide, Pierre C., "Constructions Electrotechniques du Centre" CETEK. Electro-thermic starter for igniting fluorescent lamps. 3,768,056, Cl. 337-23.000.

Eisen- und Drahtwerk Erlau AG: *See—*
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Ekstrom, Ake, to Allmanna Svenska Elektriska Aktiebolaget. Control means for static converters. 3,767,999, Cl. 321-18.000.

Elder, Michael L.; and Little, John S., Jr. Plural flush toilet valve apparatus. 3,766,571, Cl. 4-34.000.

Electro Sound Incorporated: *See—*
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Elektro-Ion, Inc.: *See—*
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Elf Union and Ateliers des Charmilles S.A.: *See—*
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Elgin Metal Casket Company: *See—*
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Rubricius, Jeanette Lois, 3,766,925.

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Elzer, Bernard J.: *See—*
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Emerson Electric Co.: *See—*
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Engalitcheff, John, Jr.; Bradley, Wilson E., Jr.; and Schinner, Edward N., to Baltimore Aircoil Company, Inc. Injector type cooling tower. 3,767,176, Cl. 261-116.000.

Engalitcheff, John, Jr.; Bradley, Wilson E., Jr.; and Schinner, Edward N., to Baltimore Aircoil Company, Inc. Injector type cooling tower. 3,767,177, Cl. 261-116.000.

Engelhard, Helmut; Rinkler, Heinrich-August; and Nischk, Gunther, to Bayer Aktiengesellschaft. Process for the production of acrylonitrile copolymers containing tertiary aliphatic or cycloaliphatic amino functions. 3,767,631, Cl. 260-80.730.

Engelhardt, John S., to Anaconda Company, The, mesne. Pothead termination comprising a vapor condenser and a tubular conductor extension containing a vaporizable liquid, and method. 3,767,835, Cl. 174-11.0bh.

Engrenages et Reducteurs: *See—*
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Enthone, Incorporated: *See—*
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Ercole Marelli & C. S.p.A.: *See—*
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Erickson, Gastav F., to U.M.C. Industries, Inc. Money-handling device. 3,767,080, Cl. 221-13.009.

Ericson, David B.; Wollin, Goesta; and Zaunere, Roger L. Fan apparatus. 3,767,324, Cl. 416-201.000.

Eriksson, Nils E., to Ingenjorsfirman Idema Bibbhult. Trampoline. 3,767,192, Cl. 272-65.000.

Erskine, Donald O.: *See—*
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Esco Manufacturing Company: *See—*
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Essex International Inc.: *See—*
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Esso Production Research Company: *See—*
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Brown, Robert J., 3,766,743.
Heilbecker, Joe K.; and Robinson, Leon H., 3,766,997.
Kiel, Othar M., 3,766,986.
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Estes, Day E., III; and Anderson, Robert L., Jr., to Essex International Inc. Engine member position predictor. 3,767,902, Cl. 235-151.320.

Ettenberg, Michael; and Cannuli, Vincent Michael, to RCA Corporation. Method for epitaxially growing layers of a semiconductor material from the liquid phase. 3,767,481, Cl. 148-171.000.

Eurocom Establishment: *See—*
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Evanwoods Limited: *See—*
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Ever Ready Company (Great Britain), Limited, The: *See—*

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Every, Richard L.: *See—*
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Fadgen, Earl Joseph, Jr.; and Saubestre, Edward Basil, to Enthone, Incorporated. Activator solutions, their preparation and use in electroless plating of surfaces. 3,767,583, Cl. 252-79.400.
Falconbridge Nickel Mines Limited: *See—*
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Farbenfabriken Bayer Aktiengesellschaft: *See—*
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Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
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Kunstmann, Walter; Ribka, Joachim; and Junker, Peter, 3,767,643.
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Farrar, Gervase Bernard, to Norton, Sir James Farmer, & Co. Limited. Vacuum impregnating apparatus for treating webs. 3,766,756, Cl. 68-19.100.
Farrow, Roger M.; Kimber, Anthony B.; Colf, John Barrington; Miles, John Walter; and Griffiths, Graham Ernest, to Balston, W. & R., (Industrial) Limited. Filter tube containing a self-sealing filter tube. 3,767,054, Cl. 210-232.000.
Faust, Jesse A.: *See—*
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Hardt, David R., 3,766,855.
Hardt, David R., 3,766,856.
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Fay, Robert B., to Dennison Manufacturing Company. Harnessing device. 3,766,608, Cl. 24-16.0pb.
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Ganz, Robert H., 3,767,042.
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Fenton, Donald M., to Union Oil Company of California. Alcohol amine interchange. 3,767,709, Cl. 260-583.00r.
Fenyes, Joseph G. E.; and Flanagan, Kenneth J., to Buckman Laboratories, Inc. Dialkyl-3-acetyl-4-hydroxyphenzyl phosphonates. 3,767,735, Cl. 260-946.000.
Fernseh G.m.b.H.: *See—*
Lang, Heinwig; and Laschat, Fritz, 3,767,290.
Fero, Joseph Bernard. Drilling rig. 3,767,147, Cl. 248-16.000.
Ferry, William R.: *See—*
Voss, James R.; and Ferry, William R., 3,766,895.
Fertl, Walter H.; and Hillhouse, John L., to Continental Oil Company. Geopressure detection during drilling of a well. 3,766,993, Cl. 175-50.000.
Fertl, Walter H., to Continental Oil Company. Abnormal pressure detection during drilling of a well. 3,766,994, Cl. 175-50.000.
Fiat Societa per Azioni: *See—*
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Fielder, Foreman F. Dental floss tool. 3,766,931, Cl. 132-92.00a.
Fields, Charles E.: *See—*
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Filand, Ehrlich M., to Aluminum Company of America. Rapid curing composition and method. 3,767,461, Cl. 117-132.00b.
Filewicz, Erwin C.: *See—*
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Filper Corporation: *See—*
Meissner, Konrad E.; Lane, William A.; and Pelster, Edwin J., 3,766,702.
Finike Italiana Morposs Soc. in Accomandita Samplice di Mario Possati & Co.: *See—*
Pozzetti, Mario, 3,768,010.
Fink, Walter: *See—*
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Finnegan, Frank Henry; Gensike, Karl Heinz; and Marsh, Robert Clayton, to Dymat Photomatrix Corporation. Method and apparatus for extending the exposure range for camera lenses. 3,766,841, Cl. 95-64.00r.
Finneran, James G., to Wheaton Industries. Liquid dispensing device. 3,766,570, Cl. 4-222.000.
Firestone Tire & Rubber Co., The: *See—*
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First National Bank of Missoula of Montana: *See—*
Morgenstern, Harold L., 3,767,170.
Fisch, Richard S.: *See—*
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Fischell, Robert E., to United States of America, Navy. Spacecraft spin stabilization system. 3,767,139, Cl. 244-15.00a.
Fischer, David; and Kohlert, Rudolf. Adjustable chuck construction. 3,767,219, Cl. 279-106.000.
Fischer, Earl L., to Victor Comptometer Corporation. Air gun with rotatable ammunition loading door. 3,766,903, Cl. 124-15.000.
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Sweeny, Keith H.; Fischer, James R.; and Lung, Charles A., 3,767,783.
Fisher, Jules. Display projector. 3,767,299, Cl. 353-38.000.
Fister, Robert V.: *See—*
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Fitzwilton, Limited: *See—*
Worthington, Ralph Eric; Thompson, William Henry; Somers, Thomas Noel Enda; and Drechsel, Erhart K. (said Worthington, Thompson and Somers assors. to said), 3,767,770.
Flais, Louis R.; and Gentile, Ralph G., to Bailey Meter Company. In-situ oxygen detector. 3,767,469, Cl. 136-225.000.
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Flanagan, Kenneth J.: *See—*
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Flexicore Co., Inc., The: *See—*
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Shoe, Theodore William, 3,767,154.
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FMC Corporation: *See—*
Besserdich, Orrin H.; and Crawford, Donald C., 3,766,701.
Mihalik, John A., 3,767,346.
Tally, Sidney K.; and Dahlgren, Victor F., 3,767,500.
Foley, Eugene Burdett, Jr.; MacRae, Alfred Urquhart; Simms, Douglas Leon; Polk, Norman Henry; and White, Clark Woody, to Bell Telephone Laboratories, Incorporated. Apparatus and method for determining the spatial distribution of constituents and contaminants of solids. 3,767,925, Cl. 250-251.000.
Folsom, Lawrence R.; Gardy, Victor R.; and Donovan, Gerard H., to General Electric Company. Ammunition handling system. 3,766,823, Cl. 89-33.00d.
Folsom, William J.: *See—*
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Fonseca, Anthony G.; and Every, Richard L., to Continental Oil Company. Method of drilling sulfur for transporting through a pipeline. 3,767,738, Cl. 264-7.000.
Forbes, Hampton E., Jr., to Westvaco Corporation. Pour spout carton. 3,767,107, Cl. 229-17.00r.
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Ford, James A.; and Ford, Alan A., to Kersch Company. Double shower rod. 3,766,597, Cl. 16-87.40r.
Forrer, Homer W. Article carrier. 3,766,837, Cl. 93-36.600.
Forsten, Irving; Jablansky, Louis; Piper, Colin B.; and Canavan, John J., to United States of America, Army. Apparatus for continuous melt-pour of high explosives. 3,766,820, Cl. 86-23.000.
Forster, Peter E.; and Adamcik, John A., to Motch & Merryweather Machinery Company, The. Workpiece loader and unloader. 3,766,617, Cl. 29-33.00p.
Fortner, Walter; and Hoscher, Rudolf, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Continuous casting plant for slabs. 3,766,968, Cl. 164-283.000.
Foster, E. Gordon: *See—*
Cunningham, Jack W.; Foster, E. Gordon; and Vanderwater, Robert G., 3,766,714.
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Foufounis, Jean; and Foufounis, Chantal. Egg inspection device. 3,767,303, Cl. 356-63.000.
Fox, Charles J., to Eastman Kodak Company. Alkylaminoaromatic organic photoconductors. 3,767,393, Cl. 96-1.500.

Franke, Edward L., Jr.; and Hyde, William J., to Western Electric Company, Incorporated. Methods of manufacturing waterproof cable. 3,767,454, Cl. 117-61.000.

Franke, Rudiger: *See*—
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Freier, Edward Jr.: *See*—
Kamlukin, Igor; Stevenson, William L.; Vertanen, George J.; and Freier, Edward Jr., 3,766,722.

French, Albert Graham; Keast, David Edward; and Oven, Terence, to Coal Industry (Patents) Limited. Dust suppression means for mining machines. 3,767,265, Cl. 299-81.000.

French, Alfred W.; and Starrett, Forest J., Jr., to French Oil Mill Machinery Company, The. Mechanical screw press. 3,766,848, Cl. 100-117.000.

French, Hartlet A., to Trans-Canada Pipe Lines Limited. Scraper cups. 3,766,587, Cl. 15-104.06r.

French Oil Mill Machinery Company, The: *See*—
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Fritsch, Carl W., Jr.: *See*—
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Froebe, Ronald L.; and Hatch, Howard H., to Bourns, Inc. Potentiometer contact method. 3,766,646, Cl. 29-630.00e.

Frondal, Dale R.: *See*—
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Fruin, James C., to Anheuser-Bush, Incorporated. Batter starch. 3,767,826, Cl. 426-293.000.

Frye, Elroy E.; and Trentham, Harold L., to Thentham Corporation. Method of separating sulfur dioxide from gaseous mixtures. 3,767,777, Cl. 423-575.000.

Fryer Corporation: *See*—
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Fryer, George R., to Fryer Corporation. Banding machine and method. 3,767,885, Cl. 219-56.000.

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Grisdale, Patrick J.; and Babb, Bruce, E., to Eastman Kodak Company. Photographic triorganophosphine azide dye forming composition and article. 3,767,409, Cl. 96-91.00n.
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Gross, Daniel, to Battelle Memorial Institute. Device for illuminating the traveling path of a vehicle and protecting the driver from dazzling. 3,767,288, Cl. 350-156.000.
Grosse-Rhode, Tony W. Extendible towing tongue. 3,767,231, Cl. 280-482.000.
Grosseau, Albert A. G., to Societe Anonyme Automobiles Citroen. Anti-locking devices. 3,767,271, Cl. 303-21.00f.
Groszek, Aleksander Jerzy; Pitkethly, Robert Chalmers; and Geach, Charles John, to British Petroleum Company Limited, The. Metal/graphite compositions. 3,767,750, Cl. 264-105.000.
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Hardt, David R., to Faustel, Inc. Ink applicator means for printing press. 3,766,856, Cl. 101-366.000.
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Harvey, Donald M., to Eastman Kodak Company. Film unit. 3,767,405, Cl. 96-76.00r.
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Hattori, Hiroo, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Seat belt buckle provided with a switch means. 3,766,612, Cl. 24-230.00a.

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Haverstraw, Robert Claire; and Landis, George Gideon, to Lincoln Electric Company, The. Electrode for arc welding in air. 3,767,891, Cl. 219-146.000.

Havewala, Noshir B.; and Weetall, Howard H., to Corning Glass Works. Method of reacting an insolubilized enzyme in a fluid medium. 3,767,535, Cl. 195-116.000.

Hawkins, Albert W.; O'Shea, Ronald J.; and Case, Herbert M., to Union Carbide Corporation. Rotary heat sealer. 3,767,508, Cl. 156-389.000.

Hawthorn, Leslie (Engineers), Limited: *See*—
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Haynes, John L., to Becton, Dickinson and Company. Electronic medical diagnostic device. 3,766,908, Cl. 128-2.00h.

Haynes, John L., to Becton, Dickinson and Company. Particle counter having a clog and bubble alarm. 3,768,084, Cl. 340-243.000.

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Hazen, Wayne C., to Hazen Research, Inc. Process for the electrolytic recovery of copper from its sulfide ores. 3,767,543, Cl. 204-107.000.

Headman, Robert K., to Penn Engineering & Manufacturing Corporation. Stud insertion apparatus for an automatic machine or press. 3,766,627, Cl. 29-208.00c.

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Hebeisen, Richard; and Starkey, Russel J., to Jasper Electronics Manufacturing Company. Electronic organ with player controlled muted brass effects. 3,767,834, Cl. 84-1.190.

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Heighberger, Robert N. Meat assembling device. 3,766,601, Cl. 17-1.00r.

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Helm, John L.; West, Robert L.; and Malcolm, Vincent T., Jr., to General Dynamics Corporation. Morred barge for arctic offshore oil drilling. 3,766,874, Cl. 114-.50d.

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Henriot, Georges, to Engrenages et Reducteurs. Device for rotating a body by means of an extension piece. 3,766,796, Cl. 74-411.000.

Henry, Raymond; Sillard, Gilles; and Blanchard, Pierre, to Thomson-CSF. Passive limiter for high-frequency waves. 3,768,044, Cl. 333-17.000.

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Herzog, Rollie R.; and Neusbaum, Frank A., to General Electric Company. Voltage compensated firing circuit. 3,767,940, Cl. 307-252.00p.

Hester, Jackson B., Jr., to Upjohn Company, The. 4H-s-Triazolo[4,3-a][1,4]benzodiazepines. 3,767,660, Cl. 260-294.900.

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Hetz, Heinz K., to Yarway Corporation. Volumetric flow control system for pumps. 3,767,326, Cl. 417-214.000.

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Hirose, Toshiro; and Matsubara, Takashi, to Toagosei Chemical Industry Co., Ltd. Process for producing omega-laurolactam. 3,767,647, Cl. 260-239.30a.

Hirose, Yoshiteru; Tobe, Sadanobu; Hoshimo, Masami; Hashimoto, Kohei; and Mitsugi, Koji, to Ajinomoto Co., Inc. Method of producing protease by microorganism. 3,767,532, Cl. 195-65.000.

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Hodge, George Robert, to None Such Enterprises, Inc. Coupling device for flexible tubing and the like. 3,767,233, Cl. 285-239.000.

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Kamlukin, Igor; Stevenson, William L.; Vertanen, George J.; and Freier, Edward Jr., to Simplicity Manufacturing Company, Inc. Reversing shuttle transmission. 3,766,722, Cl. 56-11.600.
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Klebe, Johann F.; Wroblewski, Henry A.; and Gilbert, Alfred R., to General Electric Company. Trimellitimide derivatives. 3,767,671, Cl. 260-326.00n.

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Knop, Donald F., to General Motors Corporation. Transmission shift controls. 3,766,793, Cl. 74-335.000.

Knowles, Elmer E., to SKF Industries, Inc. Cage for rolling bearing assembly. 3,767,278, Cl. 308-214.000.

Knox, Kenneth Leith, to Du Pont de Nemours, E. I., and Company. Solid phase polymerization of waste polyethylene terephthalate. 3,767,601, Cl. 260-2.300.

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Kolliker, Hans-Peter; Staub, Alfred; and Hindermann, Peter, to Ciba-Geigy AG. Dispersible anthraquinone dyestuffs. 3,767,680, Cl. 260-372.000.

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Kominami, Naoya; Tamura, Nobuhiro; and Yamamoto, Etsuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for preparing chlorostyrenes. 3,767,714, Cl. 260-650.00r.

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Korea Institute of Science & Technology: *See—*
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Kraus, Theodore C.; Scruggs, James A.; and Trotz, Samuel I., to Olin Mathieson Chemical Corporation. Process for preparing non-solvated aluminum hydride. 3,767,781, Cl. 423-645.000.

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Krausse, Hans-Jurgen; and Henning, Erwin, to Veb Werkmaschinenbau Karl-Marx-Stadt. Device for braking the yarn unwinding from a disc bobbin. 3,767,136, Cl. 242-156.000.

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Kreithen, Marvin L.; and Lawler, John J., to Bridgeport Machines, Inc. Control system for producing multi-axis contour movement for a stepping motor drive. 3,767,990, Cl. 318-573.000.

Krejci, Lubomir: *See*—
Wichterle, Otto; and Krejci, Lubomir, 3,767,759.

Krekeler, Claude B., to Cincinnati Mine Machinery Co., The. Resilient retaining means for connecting work tools and work tool holders. 3,767,266, Cl. 299-92.000.

Krickovich, Eli G. Snow removal and vacuum sweeper with slurry disposal. 3,766,586, Cl. 15-83.000.

Krieger, David. Textured embroidered fabric. 3,766,872, Cl. 112-439.000.

Krisko, William J.: *See*—
Donnelly, Thomas G.; Haueter, James A.; Krisko, William J.; Schoen, Donald W.; and Lind, Chester S., 3,766,844.

Kronseder, Hermann: *See*—
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Krosswang, Kurt: *See*—
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Krueger, W. A., Company: *See*—
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Krumm, Eugene D., to Air Preheater Company, Inc., The. Thermal waste converter. 3,766,866, Cl. 110-8.00r.

Kruse, Hubert: *See*—
Spietschka, Ernst; Ische, Fredrich; and Kruse, Hubert, 3,767,357.

Kubo, Mitsuo; Nakajima, Shunichi; and Horino, Yokohama, to Tokyo Shibaura Electric Co., Ltd. Apparatus for fastening a superposed mass of sheet like materials. 3,766,708, Cl. 53-124.00d.

Kueper, Terrance Wayne; and Paska, Thomas Mitchell, to International Business Machines Corporation. Zero sense after peak detection circuit. 3,767,938, Cl. 307-235.00r.

Kuhle, Karl F.: *See*—
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Kuhlmann, Rodger H.: *See*—
Martin, Vincent F.; Woolverton, Richard J.; and Kuhlmann, Rodger H., 3,767,066.

Kuhn, Max: *See*—
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Kulig, Constantine W.: *See*—
Iacovazzi, Michael A.; and Kulig, Constantine W., 3,767,374.

Kumoda, Masasi: *See*—
Tatara, Seiji; Morita, Yasuo; Doomori, Yoshiki; Kumoda, Masasi; Iwaki, Yoshikazu; and Fujishima, Teruyuki, 3,767,775.

Kump, Herbert J., to International Business Machines Corporation. Two-step photo-etching method for semiconductors. 3,767,493, Cl. 156-17.000.

Kunda, Wasyl, to Sherritt Gordon Mines Limited. Recovery and separation of nickel and cobalt from reduced laterite nickel ore. 3,767,762, Cl. 423-145.000.

Kunreuther and Merfeld: *See*—
Merfeld, Kurt W., 3,766,613.

Kunstmann, Walter; Ribka, Joachim; and Junker, Peter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. 5-(Aminobenzenesulfonylamino)-benzimidazolone. 3,767,643, Cl. 260-239.900.

Kurata, Hirotaka, to Sansui Electric Co., Ltd. Group delay time correcting circuit including a toulon circuit for use in an intermediate-frequency amplifying circuit. 3,768,020, Cl. 325-347.000.

Kurita Machinery Manufacturing Company, Limited: *See*—
Shibasaki, Katsutami, 3,767,052.

Kurpanek, Waldemar Helmut. Magneto-motive bistable switching devices. 3,768,051, Cl. 335-153.000.

Kusiak, Edward H., to United Aircraft Corporation. Ball-screw actuator with stop mechanism. 3,766,798, Cl. 74-424.80r.

Kusters, John A.; Wilson, David A.; and Hubby, Laurence M., Jr. Acousto-optic filter having means for damping acoustic resonances. 3,767,286, Cl. 350-149.000.

Kuwamoto, Hiroshi: *See*—
Fujii, Seiji; Kuwamoto, Hiroshi; Kamata, Masamoto; and Ishida, Masayuki, 3,766,762.

Kwok, Joel; and Miller, Alex, to Union Oil Company of California. Activated carbon from petroleum coke pretreated with polyphosphoric acid. 3,767,592, Cl. 252-423.000.

La Rocca, Aldo V., to General Electric Company. Semisolid propellant and thrustor therefor. 3,767,636, Cl. 260-92.100.

La Roche, Ulrich: *See*—
Mast, Fred; Rossi, Renato; La Roche, Ulrich; and Knus, Jean A., 3,767,306.

Ladusaw, William T., to General Electric Company. Rotary compressor with capacity modulation. 3,767,328, Cl. 417-310.000.

Laing, Nikolaus. Refrigeration machine circuit with fusion storage. 3,766,752, Cl. 62-435.000.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
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Lake, Peter A. Disposable delicate tissue retractor. 3,766,910, Cl. 128-20.000.

Lambert, Bernard: *See*—
Ayel; Michel; Desselere, Jean-Pierre; and Lambert, Bernard, 3,767,473.

Lambrette, Jurgen: *See*—
Dittmar, Wilfried; Lambrette, Jurgen; and Schatz, Hermann, 3,767,994.

Lamm, August. Chlorinator including means to feed an electrolyte of predetermined density and means to withdraw chlorine against a varying back pressure. 3,767,557, Cl. 204-263.000.

Lampart, Thomas; and Kuhn, Max, to Cerberus AG. Ionizing-type fire alarm sensor. 3,767,917, Cl. 250-384.000.

Landis, George Gideon: *See*—
Haverstraw, Robert Claire; and Landis, George Gideon, 3,767,891.

Landoni, Giannino. Modular unit for the spinning of synthetic fibers modular. 3,767,347, Cl. 425-379.000.

Landry, Norman Richard: *See*—
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Lane, William A.: *See*—
Meissner, Konrad E.; Lane, William A.; and Pelster, Edwin J., 3,766,702.

Lang, Albert, Jr.; and Herte, Lawrence F., to Varian Associates. Radio frequency sputter apparatus and method. 3,767,551, Cl. 204-192.000.

Lang, Heinwig; and Laschat, Fritz, to Fernseh G.m.b.H. Beam splitting prism system for color television. 3,767,290, Cl. 350-173.000.

Lang, Karl, to Leitz, Ernst, G.m.b.H. Apparatus for generating phase modulated electrical signals in response to a measured angular or linear displacement. 3,768,022, Cl. 328-39.000.

Langer, Arthur M., Jr.: *See*—
Bunting, William M.; and Langer, Arthur M., Jr., 3,767,763.

Langsan, Michael; and Hantell, Gerald Jerome, to Air Products and Chemicals, Inc. Coating compositions and solid surfaces coated therewith. 3,767,728, Cl. 260-853.000.

Laporte Industries, Limited: *See*—
Claridge, Maurice Arthur; and Cowe, Peter Lyndon, 3,767,455.

Larrabee, Robert Dean, to RCA Corporation. Method for fabrication of polycrystalline films. 3,767,462, Cl. 117-201.000.

Larsen, James L.: *See*—
Dillman, Richard F.; Larsen, James L.; and Nardizzi, Alfred M., 3,768,017.

Larson, Charles R., to Prab Conveyors, Inc. Temperature control system for metal scrap dryers. 3,767,179, Cl. 266-33.00s.

Laschat, Fritz: *See*—
Lang, Heinwig; and Laschat, Fritz, 3,767,290.

Latrobe Steel Company: *See*—
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Lauchenauer, Alfred E., to Raduner and Co., A.G. Flameproofing combustible sheet materials. 3,767,452, Cl. 117-37.00r.

Lauer, Jay M., to Teledyne Industries, Inc. Gas analyzer. 3,767,552, Cl. 204-195.00p.

Laurent, Serge; and Mallet, Maurice, to Rhone-Poulenc S.A. Prepolymers and heat-resistant resins derived thereof. 3,767,626, Cl. 260-78.0ua.

Lavigne, Pierre, to Commissariat a l'Energie Atomique. Driving device of the stirling-cycle relaxation type for an implantable artificial heart. 3,766,568, Cl. 3-1.000.

Lawler, John J.: *See*—
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Lawson, William J.: *See*—
Harben, Grover S., Jr.; Lewis, Ernest E.; Sloan, Lloyd E.; and Lawson, William J., 3,767,044.

Lawton, Lawrence. Two color pedestrian traffic signal with means for improving color rendition. 3,768,070, Cl. 340-44.000.

Layne, Ronald Paul. Seal means for axial flow pump and the like. 3,767,321, Cl. 415-110.000.

Le Blanc, Dennis G.; and Le Blanc, Norman G. Suspension ceiling erection method and support assembly employed therein. 3,767,008, Cl. 182-129.000.
Le Blanc, Norman G.: *See—*
Le Blanc, Dennis G.; and Le Blanc, Norman G., 3,767,008.
Le Blanc, Oliver H., Jr.: *See—*
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Le Poole, Jan Bart: *See—*
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Leblan, Robert: *See—*
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Lechtenberg, Leo J., to Briggs & Stratton Corporation. Manufacture of foam air filter elements. 3,766,629, Cl. 29-412.000.
Lecrosnier, Daniel P.: *See—*
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Lectron Products Inc.: *See—*
Quantz, Norman G., 3,767,242.
Lee, Kyu-Yawp. Paunch manure treatment process. 3,767,416, Cl. 99-2.00r.
Lee, Raymond, Organization, Inc., The: *See—*
Dean, Clarence T., III, 3,767,903.
Pattengill, Ralph M., 3,767,111.
Lee, Raymond, Organization, The: *See—*
Comez, Arthur L., 3,766,652.
Noe, Max E., 3,766,679.
Leeming, Peter Rodway; Cross, Peter Edward; Cox, David Alexander; and Augstein, Joachim, to Pfizer Inc. Alkylphenoxy-alkylamines as gastric anti secretory agents. 3,767,819, Cl. 424-330.000.
Leesona Corporation: *See—*
Perrino, Thomas W., 3,767,130.
Lehrheuer, Werner; and Lison, Rudolf, to Kernforschungsanlage Julich. Method of joining metals of different melting points. 3,766,633, Cl. 29-470.500.
Leiber, Heinz, to Teldix GmbH. Hydraulic brake system with anti-locking control. 3,767,272, Cl. 303-21.0af.
Leigh, Jonathan W., to Jonathan Inc. Modular advertising display. 3,766,675, Cl. 40-126.00a.
Leighton, Lee: *See—*
Zeitlin, Edward J.; and Leighton, Lee, 3,767,893.
Leinberger, Karl G.: *See—*
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Leitz, Ernst, G.m.b.H.: *See—*
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Lely, Cornelis Van Der. Spreading implements. 3,767,126, Cl. 239-661.000.
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Lenhard, Myron J.: *See—*
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Lennox Industries, Inc.: *See—*
Parker, Sidney A., 3,766,747.
Leonard, Silvester C., to Phillips Petroleum Company. Output control for steam heated heat exchanger. 3,766,713, Cl. 55-21.000.
Lepp, Jacob H., to International Harvester Company. Stabilizer attachment-duplex-chisel plow. 3,766,989, Cl. 172-605.000.
Lerner, Julius; and Mayer, Robert, to Sun Oil Company of Pennsylvania. Unsoldering tool for printed circuit board use. 3,766,623, Cl. 29-203.00b.
Letosky, Vincent H., to General Motors Corporation. Zero crossover detector circuit. 3,768,024, Cl. 328-150.000.
Lever Brothers Company: *See—*
Deacon, Martin John; and Kindleysides, Leslie, 3,767,821.
Leverenz, John H., to Gehl Company. Bucket loader. 3,767,075, Cl. 214-776.000.
Levine, Seymour D.: *See—*
Bodanszky, Miklos; Ondetti, Miguel A.; Vonsaltza, Malcolm H.; Narayanan, Venkatachala L.; and Levine, Seymour D., 3,767,639.
Levitz, James B., to General Mills, Inc. Shelf stable, partially baked dough composition. 3,767,422, Cl. 426-152.000.
Lewis, Donald J., to Allied Chemical Corporation. Inflation time control for safety device. 3,767,228, Cl. 280-150.0ab.
Lewis, Donald Richard, to Shell Oil Company. Method for measuring the concentration of sand in a fluid stream. 3,767,916, Cl. 250-303.000.
Lewis Engineering Company, The: *See—*
Edwards, Harrison F.; and Bottorf, Stewart F., 3,767,992.
Lewis, Ernest E.: *See—*
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Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
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Licentia Patentverwaltungs-G.m.b.H.: *See—*
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Schuller, Eduard; Dickopp, Gerhard; and Rainer, Wolfgang, 3,767,865.
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Liebscher, Arthur. Loudspeakers. 3,767,004, Cl. 181-32.00r.
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Lighthall, John T.: *See—*
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Limb, John Ormond: *See—*
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Limbert, John C., to United States of America, Navy. Portable turbulent flow comparison rheometer. 3,766,773, Cl. 73-56.000.
Limon, Jose P.: *See—*
Ross, Bernard D.; and Limon, Jose P., 3,766,764.
Limpach, Paul D., to Gendron-Diemer, Inc. Horizontally adjustable armrests for wheelchairs. 3,767,260, Cl. 297-417.000.
Lincoln Electric Company, The: *See—*
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Lind, Chester S.: *See—*
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Lins, Stanley J.; and Hanson, David G., to Sperry Rand Corporation. Magnetoresistive keyboard. 3,768,095, Cl. 340-365.001.
Linsmeier, Howard T. Harvesting machine equipped with stone guard. 3,766,721, Cl. 56-10.300.
Linthicum, Harley E.; Linthicum, William A.; and Bronne, William B., to Carrier Corporation. Tool chuck. 3,767,218, Cl. 279-75.000.
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Lison, Rudolf: *See—*
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Little, Carl H., to Weber-Knapp Company. Lid counterbalance mechanism. 3,766,600, Cl. 16-190.000.
Little, John S., Jr.: *See—*
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Litton Systems, Inc.: *See—*
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Livesay, J. D., to General Motors Corporation. Window air conditioner assembly. 3,766,749, Cl. 62-262.000.
Lloyd, James R.; and Childers, Mark A., to Esso Production Research Company. Offshore structure having a removable pivot assembly. 3,766,582, Cl. 9-8.00p.
Lockhead Missiles & Space Company, Inc.: *See—*
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Brown, Albert D.; and Tygart, William R., 3,767,309.
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Lohr, Raymond J. Shuffleboard type of game with steps and sliding gamepieces. 3,767,200, Cl. 273-126.000.
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Lone Star Cement Corporation: *See—*
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Lorber, Harold; and Duboff, Irving. Precision distributed parameter delay line. 3,768,046, Cl. 333-31.00r.
Lorenc, Walter F.; and Hyde, James A., to Nalco Chemical Company. Oil removal from waste waters. 3,767,571, Cl. 210-30.000.
Loseries, Peter, to Leitz, Ernst, G.m.b.H. Actuating and control mechanism for rotary sector shutter. 3,766,840, Cl. 95-60.000.
Louis, Thomas C., to NL Industries, Inc. Independent transfer means for conveyor systems. 3,767,025, Cl. 198-19.000.
Louks, Robert A. Insulation piercing device for testing continuity of electrical circuit. 3,768,005, Cl. 324-51.000.
Loveless, Barry Ian, 50% to Send Engineering, Ltd. and Myers, M., & Sons, Limited, mesne. Apparatus for cutting paper and the like. 3,766,816, Cl. 83-489.000.

Lowe, Edward A., to General Electric Company. Electronic dead band device. 3,768,033, Cl. 330-84.000.
Lowrey, Dean R.: *See—*
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Lucas, Joseph, (Industries) Limited: *See—*
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Lucas, Lascelles Arthur. Mouthpieces for animals. 3,766,711, Cl. 54-8.000.
Lucas, Pierre M.; Sautel, Auguste A.; Chauvin, Jacques; Serezac, Daniel J.; and Cibert, Jack B. Coordinates selection switch assembly with slider bar actuator with permanent magnets activating reciprocating mercury wetted conductive plunger engaging multilanar fixed contact array. 3,767,869, Cl. 200-1.00r.
Lucero, Ronald Ray, to Interface Development Co., Inc. Process and apparatus for removing ions from liquids. 3,767,545, Cl. 204-155.000.
Ludwig, Lawrence P., to United States of America, National Aeronautics and Space Administration. Spiral groove seal. 3,767,212, Cl. 277-25.000.
Lummus Company, The: *See—*
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Lutz, David Edward. Traveling walking beam conveyor. 3,767,064, Cl. 214-1.00r.
Luz, David Warren, to RCA Corporation. Instant-on circuitry for AC/DC television receivers. 3,767,967, Cl. 315-94.000.
Mac Lean, Glenn J. Oil spillage enclosure system for marine use. 3,766,739, Cl. 61-1.00f.
Mac Millan, Francis S. Kilmer, to Procter & Gamble Company, The. Inhibiting perspiration with scopolomine esters. 3,767,786, Cl. 424-65.000.
Maccarone, Michael B.: *See—*
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MacRae, Alfred Urquhart; and Moline, Robert Alan, to Bell Telephone Laboratories, Incorporated. Semiconductor masking. 3,767,492, Cl. 156-11.000.
Maddalena, John, to Cities Service Company. Sealing method. 3,767,503, Cl. 156-244.000.
Madden, Baxter C., Jr. Method and apparatus for fabricating gas pressurized hollow spheres. 3,767,890, Cl. 219-137.000.
Madsen, Curt; Johansen, Dent Georg; and Bolsen, Lars, to Bristol-Myers Company. Vapor treatment hair curler. 3,766,930, Cl. 132-33.00r.
Mahler, Charles J.; and Tates, Donald W., to Xerox Corporation. Adjustable paper cassette. 3,767,187, Cl. 271-169.000.
Mahr, Rene N., to S.A. des Anciens Etablissements Paul Wurth. Tuyere stock for furnaces. 3,766,868, Cl. 110-182.500.
Maier, Elmar, to Hilti Aktiengesellschaft. Means for holding a fastening element driving device in position against a wall surface. 3,767,099, Cl. 227-9.000.
Maier, Martin; and Purrer, Josef, to Maschinenfabrik Fahr AG. Row-crop harvester. 3,766,723, Cl. 56-13.300.
Majdak, Louis. Fishing lure. 3,766,682, Cl. 43-42.140.
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Mallory, P. R., & Co., Inc.: *See—*
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Mander, Harold C. Tension release for fishing equipment. 3,766,681, Cl. 43-43.120.
Manning, Donald P.; Caison, Lloyd D.; and Jones, Frank R., to Allied Chemical Corporation. Method for melting and dispersion of thermoplastic polymers. 3,767,754, Cl. 264-176.000.
Manning, Harold E., to Petro-Tex Chemical Corporation. Dehydrogenation catalysts. 3,767,596, Cl. 252-465.000.
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Margolis, Morris; and Collins, Harry F., Jr., said Collins assor. to said Margolis, Morris. Package for products. 3,767,043, Cl. 206-79.000.
Marion, Charles P., to Texaco Development Corporation. Ore reduction process using recirculated coolant gas. 3,767,379, Cl. 75-42.000.
Maron, Eugene A. Can crusher. 3,766,849, Cl. 100-232.000.
Marquardt, Ewald, to Marquardt, J. & J., Firma. Multiple circuit control switch with spring biased slide operating means engaging pivoted contact assembly. 3,767,870, Cl. 200-6.00r.
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Marsh, Preston L. Farm crop handling apparatus. 3,766,725, Cl. 56-364.000.
Marsh, Robert Clayton: *See—*
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Martin, Georges Lucien Henri, to Societe de Precision Generale (Societe Anonyme). Deformable sealing ring. 3,767,216, Cl. 277-213.000.
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Peppler, Richard B.; and Rosskopf, Philip A., 3,767,436.
Sharp, Richard A.; McGrew, Jay L.; Gille, John P.; Mowrey, Eugene C.; and Buskirk, David L., 3,767,498.
Martin, Rene Jean, to Societe Francaise des Tubes Pneumatiques Levallvis Peiret. Waiting apparatus for pneumatic for dispatch systems. 3,767,138, Cl. 243-28.000.
Martin, Vincent F.; Woolverton, Richard J.; and Kuhlmann, Rodger H., to M.K.W. Industries, Incorporated. Portable freight spacer. 3,767,066, Cl. 214-10.50r.
Marton, Roland M.: *See—*
Peil, William; Diano, Peter R.; Marton, Roland M.; and Watkins, Brian J., 3,768,061.
Maruta, Isao: *See—*
Nakashio, Seizo; Maruta, Isao; Hayatsu, Kazuo; and Kono, Yoichi, 3,767,730.
Maruzen Sewing Machine Co., Ltd.: *See—*
Mastuda, Kimikazu; and Nishigami, Teichi, 3,766,871.
Mascenik, John: *See—*
Stracke, Fred H.; and Mascenik, John, 3,766,938.
Maschinenfabrik Fahr AG: *See—*
Maier, Martin; and Purrer, Josef, 3,766,723.
Maschinenfabrik Schweiter AG: *See—*
Perberschlager, Alois, 3,766,886.
Mason, John P., to Esso Production Research Company. Pressure latching check valve. 3,766,940, Cl. 137-460.000.
Mason, Robert Jean; and Landry, Norman Richard, to RCA Corporation. Waveguide assembly including a toroid having dielectric material therein. 3,768,040, Cl. 333-24.100.
Massar, Ernst, to Siemens Aktiengesellschaft. Superconductive switching path for heavy current. 3,768,053, Cl. 335-216.000.
Massey-Ferguson Industries Limited: *See—*
Himsl, Ernst G., 3,766,959.
Mast, Fred; Rossi, Renato; La Roche, Ulrich; and Knus, Jean A., to Gretag Aktiengesellschaft. Method and apparatus for detecting dust particles by partial embedment in a layer whose surface is deformed by the particles and measuring radiation scattered by he particles with a Schieren optical system. 3,767,306, Cl. 356-102.000.
Mastuda, Kimikazu; and Nishigami, Teichi, to Maruzen Sewing Machine Co., Ltd. Zig zag sewing machine. 3,766,871, Cl. 112-210.000.
Masuyama, Kazuyoshi: *See—*
Sawabe, Shigeji; Genda, Yoshikazu; Yamamoto, Takeo; Masuyama, Kazuyoshi; and Takebayashi, Michinori, 3,767,585.
Masuyama, Takeshi; Matsuoka, Michio; Iida, Yoshi; and Matsuura, Mikio, to Matsushita Electric Industrial Co. Ltd. High temperature thermistor composition. 3,767,597, Cl. 252-518.000.
Matburn (Holdings) Limited: *See—*
Pidgeon, Rosemary Sylvia Vyvyan, 3,766,924.
Matherson-Selio Co.: *See—*
Gustafson, Eric, 3,767,510.

Mathew, Chempolil T., to Allied Chemical Corporation. Phenyl-substituted hydroxyalkyl derivatives of glycolurils. 3,767,669, Cl. 260-309.700.

Mathews, John A., to Eastman Kodak Company. Film unit with foldable trap and pod for processing fluid. 3,767,406, Cl. 96-76.00c.

Matsubara, Takashi: *See—*
Hirose, Toshiro; and Matsubara, Takashi, 3,767,647.

Matsuda, Toshio: *See—*
Ueno, Ryuzo; Kashihara, Motomu; and Matsuda, Toshio, 3,767,827.

Matsuoka, Michio: *See—*
Masuyama, Takeshi; Matsuoka, Michio; Iida, Yoshi; and Matsuura, Mikio, 3,767,597.

Matsushita Electric Industrial Co., Ltd.: *See—*
Higashida, Yutala; Imanishi, Kaoru; Koukiki, Nobushige; and Mizuno, Sadao, 3,767,866.
Masuyama, Takeshi; Matsuoka, Michio; Iida, Yoshi; and Matsuura, Mikio, 3,767,597.
Ota, Isao, 3,767,392.
Sano, Ichiro; and Sakurai, Testuo, 3,767,889.
Tonari, Hirohiko, 3,767,112.

Matsuura, Mikio: *See—*
Masuyama, Takeshi; Matsuoka, Michio; Iida, Yoshi; and Matsuura, Mikio, 3,767,597.

Matsuyama, Glen, to Graphic Arts Packaging Corporation. Pillow-pack carton blank. 3,767,105, Cl. 229-8.000.

Mattern, Dietrich: *See—*
Knoll, Alois; Mattern, Dietrich; and Volcker, Hans-Werner, 3,766,838.

Mattingly, William R., Jr.; and Goodman, David S., to International Telephone and Telegraph Corporation. Printed circuit board connector card guide. 3,768,066, Cl. 339-65.000.

Matzek, Lester Tuvker, to Warwick Electronics, Inc. FM limiter using single didde. 3,768,027, Cl. 329-134.000.

Maurice, Jean, to Societe Anonyme Francaise du Ferodo. Disc brake with plural piston acting on one shoe. 3,767,017, Cl. 188-22.500.

May & Baker, Limited: *See—*
Clark, David William Harold; and Threlfall, Terence Leslie, 3,767,443.

May, William A.: *See—*
Chang, Stephen S.; and May, William A., 3,767,427.

Mayer, Francis K.; and Moritz, Karlsten H., to Esso Research and Engineering Company. Hydrodesulfurization of hydrocarbon residuum with catalytic oil slurry and fixed bed zones. 3,767,569, Cl. 208-210.000.

Mayer, Heinz: *See—*
Schnattinger, Walter Ludvig; Seelos, Albert; Mayer, Heinz; Oelmayer, Reinhold; Duell, Josef; Hertl, Wilhelm; Koch, Hans-Jorg; and Stock, Hans-Joachim, 3,767,844.

Mayer, Robert: *See—*
Lerner, Julius; and Mayer, Robert, 3,766,623.

Maytay, Joseph A. Gear treatment apparatus. 3,766,688, Cl. 51-89.000.

Mazelsky, Bernard. Construction for safety air cushion system comprising dual bags, nozzle, and air aspiration. 3,767,225, Cl. 280-150.01b.

Mc Collum, Robert F. Null-balance regulator valve. 3,767,160, Cl. 251-61.000.

Mc Ewen, John C., to General Motors Corporation. Clamp for a member with an internal flange. 3,766,812, Cl. 82-40.00r.

Mc Leod, Winford Newton. Lightweight container means. 3,767,036, Cl. 206-16.00r.

Mc Vean, Duncan E.; and Tuerck, Paul A., to Richardson-Merrell Inc. Antifoam preparations and method of preparing same. 3,767,794, Cl. 424-157.000.

McAnally, William J., III, to United Aircraft Corporation. Particle and moisture separator for engine inlet. 3,766,719, Cl. 55-306.000.

McArdle, John J.; and Rauch, Robert L., to RCA Corporation. High voltage hold down circuit. 3,767,963, Cl. 315-20.000.

McCabe, John M.; Perlowski, John S.; and Schur, Ronald J., to Eastman Kodak Company. Method for producing oxide coated iron powder of controlled resistance for electrostatic copying systems. 3,767,477, Cl. 148-6.350.

McConnell, Lorne D., to I-T-E Imperial Corporation. Gas insulated flexible high voltage cable. 3,767,838, Cl. 174-25.00b.

McCoy, Lowell R.; and Heredy, Laszlo A., to Rockwell International Corporation. Electrode structure and battery. 3,767,466, Cl. 136-131.000.

McDonnell Douglas Corporation: *See—*
Johnson, Robert E., 3,767,140.

McGrew, Jay L.: *See—*
Sharp, Richard A.; McGrew, Jay L.; Gille, John P.; Mowrey, Eugene C.; and Buskirk, David L., 3,767,498.

McHale, Myrtle, B. Rug making device and method of use. 3,766,869, Cl. 112-9.000.

McIlrath, William P., to Racine Railroad Products, Inc. Rail anchor setter and applicator. 3,766,860, Cl. 104-17.00a.

McKay, Russell M., Sr., to Lockhead Missiles & Space Company, Inc. Three axis inspection probe. 3,766,653, Cl. 33-174.001.

McKee Baking Company: *See—*
McKee, Oather D.; and Whitmill, Robert L., 3,767,089.

McKee, Oather D.; and Whitmill, Robert L., to McKee Baking Company. Apparatus for deposition discrete articles, such as raisins, upon a carrier. 3,767,089, Cl. 222-221.000.

McKillip, William J.: *See—*
Throckmorton, Peter E.; McKillip, William J.; and Richards, Harvey J., 3,767,615.

McKinven, Robert, Jr., to Chicago Rawhide Manufacturing Co. Apparatus for removing parts from molding cavities. 3,767,063, Cl. 214-1.0bb.

McLaughlin, Gordon, to Eddy Match Company Limited. Locking system for filing cabinets. 3,767,280, Cl. 312-214.000.

McLaughlin, Joseph J., Jr. Portable device. 3,766,960, Cl. 160-405.000.

McMann, Renville H.: *See—*
Horowitz, Harvey M.; Decker, Saul M.; and McMann, Renville H., 3,767,852.

McMillan, Lonnie S.; Hutchinson, Arthur H.; and Gard, Leslie H., to Abbott Laboratories. Graphic recording apparatus and method. 3,767,850, Cl. 178-6.70r.

McMullen, Wesley W., to General Motors Corporation. Crankcase ventilating valve. 3,766,898, Cl. 123-119.00b.

McVey, Charles I.: *See—*
Collins, Byron R.; Sulcs, Juris; and McVey, Charles I., 3,767,965.

Meiji Seika Kaisha, Ltd.: *See—*
Tsuruoka, Takashi; Fukatsu, Shunzo; Nomiya, Bunzo; Inoue, Shigeharu; and Niida, Taro, 3,767,641.

Meissner, Andre: *See—*
Delatronchetta, Claude; Helion, Raymond; Gunthart, Rene; and Meissner, Andre, 3,766,942.

Meissner, Konrad E.; Lane, William A.; and Pelster, Edwin J., to Filper Corporation. Packaging machine for individual portions, and method. 3,766,702, Cl. 53-30.000.

Melle-Bezons: *See—*
Gobron, Georges; Falize, Claude Gilbert; and Dufour, Henri, 3,767,711.

Melzer, Carl-August: *See—*
Reh, Lothar; and Melzer, Carl-August, 3,767,768.

Menicanti, Adriano; and Oberto, Giacomo, to Olivetti, Ing., C., & C., S.p.A. Cam actuated shift device with continuously operated intermediate lever for type-bar typewriter. 3,767,021, Cl. 197-74.000.

Menrich, Charles T. Digital encoder and position reference. 3,768,094, Cl. 340-347.00p.

Merck & Co., Inc.: *See—*
Hammes, Paul A.; and Boroshok, Melvin J., 3,767,825.
Loeffler, Larry J., 3,767,814.

Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Nornberg, Aberhard, 3,767,803.

Meredith Corporation: *See—*
Mjos, Clarence B.; and Stockwell, Reed, 3,766,626.

Merfeld, Kurt W., to Kunreuther and Merfeld. Fabric and garment clip. 3,766,613, Cl. 24-255.0tv.

Meserve, P. Clayton, to Bandag Incorporated. Grinding tool. 3,766,690, Cl. 51-173.000.

Messer Griesheim G.m.b.H.: *See—*
Pfeuffer, Alfred; Weber, Helmut; and Joachem, Hans, 3,767,178.

Messerschmitt-Bolkow-Blohm GmbH: *See—*
Zech, Hans, 3,767,323.

Metal Hydrides, Incorporated: *See—*
Snover, John A.; and Donovan, Richard D., 3,767,715.

Metallgesellschaft A.G.: *See—*
Reh, Lothar; and Melzer, Carl-August, 3,767,768.

Metcalf, Eric: *See—*
Dorey, Howard Anthony; and Metcalf, Eric, 3,768,009.

Metz, Joseph R., to Norco, Inc. Radial roller anti-friction transmission with eccentric bushings. 3,766,788, Cl. 74-441.000.

Metzler, Franklin A.; and Smith, James M., to GTE Sylvania Incorporated. Method of winding toroidal yokes. 3,766,641, Cl. 29-605.000.

Meyer & Cie Maschinenfabrik: *See—*
Schnurrer, Hans, 3,766,753.

Mezey, Charles C.; and Paoli, Angelo, to Full Mold Process, Inc. Air breathing flask for foundry mold. 3,766,969, Cl. 164-383.000.

Mezrich, Reuben Saul, to RCA Corporation. Enhanced readout of stored holograms. 3,767,285, Cl. 350-3.500.

Michaelis, Walfried, to Gesellschaft fur Kernforschung mbH. Method and device for the non-destructive analysis of nuclear fuels. 3,767,919, Cl. 250-391.000.

Michaels, Leonard H., to Molex Incorporated. Terminal for flexible circuits. 3,768,062, Cl. 339-17.00c.

Mickey, Carl F.; and Mickey, Lawrence E., to Mickey, W. F., Body Company, Inc. Truck body with bottom conveyor assembly. 3,767,067, Cl. 214-83.220.

Mickey, Lawrence E.: *See—*
Mickey, Carl F.; and Mickey, Lawrence E., 3,767,067.

Mickey, W. F., Body Company, Inc.: *See—*
Mickey, Carl F.; and Mickey, Lawrence E., 3,767,067.

Migitaka, Masatoshi; and Saito, Katutoshi, to Hitachi, Ltd. Semiconductor diode laser device. 3,768,037, Cl. 332-7.510.

Mihailovski, Alexander; and Baker, Don R., to Stauffer Chemical Company. Phosphorylated thiourea compositions. 3,767,734, Cl. 260-938.000.

Mihalik, John A., to FMC Corporation. Film extrusion die. 3,767,346, Cl. 425-378.000.

Mikune Kogyo Co., Ltd.: *See—*
Ishii, Keikichi, 3,767,173.

Mikus, Glenn H., to Flexicore Co., Inc., The. Concrete form construction. 3,767,158, Cl. 249-192.000.

Milchem Incorporated: *See—*

Bruson, Herman A.; and Gould; Henry, 3,767,598.

Miles, John Walter: *See—*
Farrow, Roger M.; Kimber, Anthony B.; Colf, John Barrington; Miles, John Walter; and Griffiths, Graham Ernest, 3,767,054.

Milford Rivet and Machine Company: *See—*
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Miller, Alex: *See—*
Kwok, Joel; and Miller, Alex, 3,767,592.

Miller, Berry B.; and Miller, Carol R., to Eastman Kodak Company. Emulsion containing internally fogged photosensitive silver halide grains formed with an aqueous silver salt solution containing alkali metal iodide in thioether. 3,767,413, Cl. 96-107.000.

Miller, Carol R.: *See—*
Miller, Berry B.; and Miller, Carol R., 3,767,413.

Miller, George A., to Texas Instruments, Incorporated. Etching composition preparatory to nickel plating. 3,767,582, Cl. 252-79.400.

Miller, James H.; and Hakarine, Duane D., to Gould, Inc. Battery side terminal assembly. 3,767,467, Cl. 136-135.000.

Miller, Laurence L., to TRW Inc. Shaft retaining means for hydrostatic steering devices. 3,767,165, Cl. 251-213.000.

Miller, Paul L., to Thermo Weave, Inc. Method of producing a non-woven pile product. 3,767,495, Cl. 156-72.000.

Miller, Richard E.: *See—*
Bachman, Carl E.; Miller, Richard E.; and Smoots, Edwin H., 3,767,104.

Mills, Hadley B. Apparatus for producing a mist of a fluid. 3,767,172, Cl. 261-18.00a.

Mills, Jack F., to Dow Chemical Company, The. Inhibiting corrosion of iron-by bromine. 3,767,767, Cl. 423-269.000.

Mills, Thomas Lewis; and Anton, Tim Luverne. Artificial horns for rodeo steers and method of constructing same. 3,766,889, Cl. 119-144.000.

Milwaukee Valve Company, Inc.: *See—*
Robinson, Bernie E., 3,767,164.

Mine Safety Appliance Company: *See—*
Staub, Charles H., Jr., 3,767,366.

Minialoff, Edward P.; and Minialoff, Joseph M. Fascia structure. 3,766,694, Cl. 52-95.000.

Minialoff, Joseph M.: *See—*
Minialoff, Edward P.; and Minialoff, Joseph M., 3,766,694.

Minnesota Mining and Manufacturing Company: *See—*
Huffman, William A.; Lowrey, Dean R.; Hill, Brian K.; and Bush, Jacquelyn D., 3,767,414.
Newman, Norman; and Fisch, Richard S., 3,767,401.
Tushaus, Leonard A., 3,767,040.
Wiese, Joseph A., Jr.; and Tiers, George Van Dyke, 3,767,394.

Minnesota Mining and Manufacturing Company, mesne: *See—*
Johnson, Edgar G., 3,767,291.

Mitchell, Francis Marion: *See—*
Cofer, Daniel B.; Mitchell, Francis Marion; Ward, George C.; and Kozak, Milan, 3,766,763.

Mitchell, James C.: *See—*
Eckman, Richard E.; and Mitchell, James C., 3,766,990.

Mitchell, Norman D. Fire protection device for building structure. 3,766,958, Cl. 160-84.00r.

Mitchell, Richard Frank, to U.S. Philips Corporation. Acoustic surface wave devices. 3,768,032, Cl. 333-30.00r.

Mitsubishi Chemical Industries, Ltd.: *See—*
Yamaguchi, Kazuo; Hasuo, Masayoshi; and Ito, Isao, 3,767,635.

Mitsubishi Oil Co., Ltd.: *See—*
Toyoguchi, Mitsuru; Iijima, Hiroshi; and Noriya, Kunihiko, 3,767,741.

Mitsugi, Koji: *See—*
Hirose, Yoshiteru; Tobe, Sadanobu; Hoshimo, Masami; Hashimoto, Kohei; and Mitsugi, Koji, 3,767,532.

Mitsui, Nobuo; Watanabe, Akinori; Numata, Kazuo; Fukushima, Isao; Komuro, Katsu; and Hatakeyama, Takanobu, to Hitachi, Ltd. Control apparatus for an induction motor. 3,767,987, Cl. 318-203.00r.

Mitsui Shipbuilding and Engineering Co., Ltd.: *See—*
Shirato, Takeshi; and Ogishi, Toshiyuki, 3,767,318.
Yamauchi, Ryoichi; and Odaka, Minoru, 3,767,033.

Mitsukawa, Masakazu: *See—*
Sato, Yoshiaki; Kagami, Kamoto; Motaki, Shigeroku; and Mitsukawa, Masakazu, 3,766,770.

Mitsushita Electric Industrial Co., Ltd.: *See—*
Kojima, Konio; and Wada, Mitsuo, 3,767,519.

Miura, Yoshiharu. Recycle type, continuous process for fermentation based on application of mixed culturing principle. 3,767,534, Cl. 195-115.000.

Miura, Yukio: *See—*
Takano, Hiroshi; Nakajima, Hitoshi; Harada, Kenzo; and Miura, Yukio, 3,767,399.

Miwa, Yasuo: *See—*
Kishida, Motoki; and Miwa, Yasuo, 3,766,730.

Miyamaoto, Akio: *See—*
Hayashi, Takao; Kato, Hajime; and Miyamaoto, Akio, 3,767,449.

Miyazaki, Takao: *See—*
Tokuyama, Takashi; Mori, Takaaki; Kozuka, Hirotsugu; Miyazaki, Takao; Yoshida, Isao; and Nishimatsu, Shigeru, 3,767,483.

Mize, Lawrence A. Two cycle internal combustion engine with sequential opening and closing of exhaust and intake ports. 3,766,894, Cl. 123-53.00b.

Mizuno, Hideaki; and Akiyama, Naoki, to Victor Company of Japan, Ltd. Electron scattering prevention film and method of manufacturing the same. 3,767,447, Cl. 117-33.5cp.

Mizuno, Sadao: *See—*
Higashida, Yutala; Imanishi, Kaoru; Koukiki, Nobushige; and Mizuno, Sadao, 3,767,866.

Mjos, Clarence B.; and Stockwell, Reed, to Meredith Corporation. Apparatus for manufacture of loose-leaf binder. 3,766,626, Cl. 29-208.00d.

M.K.W. Industries, Incorporated: *See—*
Martin, Vincent F.; Woolverton, Richard J.; and Kuhlmann, Rodger H., 3,767,066.

Mobil Oil Corporation: *See—*
Braid, Milton, 3,767,575.
Chen, Nai Yuen, 3,767,568.
Coty, Vernon F.; and Leavitt, Richard I., 3,767,527.

Mohawk Precision Corporation: *See—*
Winbauer, Alois P., 3,766,649.

Mohrhauser, John P.; and Strazza, Richard W. Multiple wheel combination lock. 3,766,760, Cl. 70-314.000.

Moisand, Brian H.: *See—*
Kaminski, Philip G.; Moisand, Brian H.; and Stone, Bruce M., 3,767,995.

Molby, Lloyd A.: *See—*
White, James C., Jr.; and Molby, Lloyd A., 3,767,069.

Molex Incorporated: *See—*
Michaels, Leonard H., 3,768,062.

Moline, Robert Alan: *See—*
MacRae, Alfred Urquhart; and Moline, Robert Alan, 3,767,492.

Monarch Marking Systems, Inc.: *See—*
Pabodie, Robert M., 3,767,098.

Monbaliu, Marcel Jacob; van den Bergh, Armand Maria; and Priem, Jan Jozef, to Agfa-Gevaert N.V. Polymeric colour couplers and their use in colour photography. 3,767,412, Cl. 96-100.000.

Monsanto Company: *See—*
Alt, Gerhard H., 3,767,623.
Clark, Frank S.; and Fink, Walter, 3,767,691.
Coran, Aubert Y.; and Swaney, Larry R., 3,767,505.
Doughty, Robert L.; and Wheeler, Clayton A., 3,767,345.
Horberg, Charles, Jr.; and Shelby, Richard K., 3,767,350.

Montabert, Roger. Percussion apparatus. 3,766,830, Cl. 91-26.000.

Montgomery, Stewart Robert, to Grace, W. R., & Co. Process for producing copper chromite catalysts. 3,767,595, Cl. 252-454.000.

Moody, David L.; Loftis, James B.; and Boyle, James E., to Joy Manufacturing Company. Drilling apparatus. 3,766,996, Cl. 173-57.000.

Mookherjee, Braja D.; Giacino, Christopher; Karoll, Elizabeth A.; and Vock, Manfred H., to International Flavors & Frangrances Inc. Process of flavoring of foodstuffs with 2-acetyl-3-ethylpyrazine. 3,767,428, Cl. 99-14.00r.

Moore, Arthur H., to Hugle Industries, Inc. Wafer spreader. 3,766,638, Cl. 29-583.000.

Moore, Earl P., Jr., to Du Pont de Nemours, E. I., and Company. Particulate refactory material coated with a negative silica sol setting agent. 3,767,458, Cl. 117-100.00s.

Moore, William J.: *See—*
Bishop, Stephen G.; and Moore, William J., 3,767,928.

Moorehead, Harvey; Reading, George R.; and Smith, Silas S., to Deseret Pharmaceutical Company, Inc. Y stylet catheter placement assembly. 3,766,916, Cl. 128-214.400.

Moorehead, Thomas J.: *See—*
Borbas, Robert A.; Dufton, John P.; Duthie, Robert W.; Lighthall, John T.; Moorehead, Thomas J.; and Verbaas, George, 3,767,863.

Morales, Gerald A., to American Safety Equipment Corporation. Electrical sensor unit for a safety belt retractor. 3,767,134, Cl. 242-107.400.

Morat, Franz, G.m.b.H., Firma: *See—*
Schnattinger, Walter Ludvig; Seelos, Albert; Mayer, Heinz; Oelmayer, Reinhold; Duell, Josef; Hertl, Wilhelm; Koch, Hans-Jorg; and Stock, Hans-Joachim, 3,767,844.

Morgan, Charles Robert, to Grace, W. R., & Co. Solid photoresist comprising a polyene and a polythiol. 3,767,398, Cl. 96-36.200.

Morgan, Robert L. Container partitions. 3,767,106, Cl. 229-15.000.

Morgenstern, Harold L., to First National Bank of Missoula of Montana. Method and apparatus for mixing and transporting concrete. 3,767,170, Cl. 259-148.000.

Mori, Atsushi: *See—*
Suzuki, Hideo; Yoshida, Harumi; Ozawa, Yoshiko; Kamibayashi, Akira; Sato, Munetaka; Mori, Atsushi; and Endo, Makoto, 3,767,526.

Mori, Kazuo: *See—*
Inaba, Shigeho; Yamamoto, Michihiro; Ishizumi, Kikuo; Mori, Kazuo; and Yamamoto, Hisao, 3,767,797.

Mori, Shigejiro; Uchikawa, Hiroshi; and Uchida, Shunichiro, to Onoda Cement Company, Ltd. Rapid hardening Portland cement clinker composition. 3,767,435, Cl. 106-89.000.

Mori, Takaaki: *See—*
Tokuyama, Takashi; Mori, Takaaki; Kozuka, Hirotsugu; Miyazaki, Takao; Yoshida, Isao; and Nishimatsu, Shigeru, 3,767,483.

Mori, Yoichi, to Nissan Motor Company, Limited. Hydromechanical power transmission system. 3,766,804, Cl. 74-687.000.

Morinaga Nyugyo Kabushiki Kaisha: *See—*
Okada, Katsuto; Tomita, Mamoru; Ono, Minobu; Yamazaki, Katsuhara; and Ohkuma, Juichi, 3,767,548.

Morita, Yasuo: *See—*
Tatara, Seiji; Morita, Yasuo; Doomori, Yoshiki; Kumoda, Masasi; Iwaki, Yoshikazu; and Fujishima, Teruyuki, 3,767,775.

Moritz, Karlsten H.: *See—*

Mayer, Francis K.; and Moritz, Karlsten H., 3,767,569.
Morner, Johann. Sealing device for bounding concrete sections when making slit walls. 3,766,695, Cl. 52-127.000.
Morrell, Charles E.; and Taranko, Lubomyr B., to Esso Research and Engineering Company. Complex cobalt carbonyl compounds. 3,767,688, Cl. 260-439.00r.
Morrell, John, & Co.: *See—*
Jezuit, Arthur D., 3,767,349.
Morris, William F., Jr. Cube ice making machine and method. 3,766,744, Cl. 62-73.000.
Mort, Paul R., Jr.: *See—*
Cleary, Robert A.; and Mort, Paul R., Jr., 3,766,901.
Moser, James R., to Catalyst Research Corporation. Electrolytic timing cell. 3,768,015, Cl. 324-182.000.
Moss, Jack N.; and Sambuca, Albert S., to Rohm and Haas Company. Diuretic thioureas. 3,767,816, Cl. 424-322.000.
Motaki, Shigeroku: *See—*
Sato, Yoshiaki; Kagami, Kamoto; Motaki, Shigeroku; and Mitsukawa, Masakazu, 3,766,770.
Motch & Merryweather Machinery Company, The: *See—*
Forster, Peter E.; and Adamcik, John A., 3,766,617.
Motorola, Inc.: *See—*
Artner, Marcus M., 3,766,759.
Brown, Kenneth H.; and Kline, Arthur J., Jr., 3,768,030.
Del Ciello, Robert R., 3,767,997.
Friend, Lawrence O.; and Stevens, Thad, 3,768,042.
Kaminski, Philip G.; Moisand, Brian H.; and Stone, Bruce M., 3,767,995.
Ring, Charles Martin, 3,768,031.
Stiles, Charles Wesley, Jr., 3,768,050.
Mowrey, Eugene C.: *See—*
Sharp, Richard A.; McGrew, Jay L.; Gille, John P.; Mowrey, Eugene C.; and Buskirk, David L., 3,767,498.
Moyer, Richard E. Apparatus for drying fabrics. 3,766,662, Cl. 34-158.000.
Moyer, Ronald C.; and Uffner, Melville W. Functional surface coating compositions for cellulosic material. 3,767,439, Cl. 106-210.000.
Mueller, Allen Howard, to Daniel Industries, Inc. Method and apparatus for direct measurement of percent. 3,768,006, Cl. 324-61.00r.
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Loveless, Barry Ian, 3,766,816.
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NL Industries, Inc.: *See—*
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Noble, Roger R.; and Bernardi, William A., to Computone, Inc. Electronic musical instrument. 3,767,833, Cl. 84-1.010.

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Norco, Inc.: *See—*
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Nordeen, Donald L., to General Motors Corporation. Brake booster and master cylinder assembly. 3,766,735, Cl. 60-550.000.

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Norfleet, William V.; Sibbach, Wilmer Charles; and Schueler, Donald R. Method for repairing old sonar transducers. 3,766,630, Cl. 29-401.000.

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Nuss, James J., to General Electric Company. Decorative trim strip mounting means. 3,766,700, Cl. 52-624.000.

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Oakley, Daniel C.; Jacobsen, Ralph T.; and Van Delud, Harley J., to ESB Incorporated. Battery powered electric lantern. 3,767,911, Cl. 240-10.630.

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Oberto, Edwin L.; Ryan, David E.; and Wiltberger, Jon C., to Brugess Vibrocrafters Inc. Oscillating water sprinkler. 3,767,118, Cl. 239-272.000.

Oberto, Giacomo: *See—*
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Odier, Jean Alfred, to Societe Anonyme Francaise du Ferodo. Braking rotating components and cooling means. 3,767,015, Cl. 188-71.600.

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Ogle, James A., to Burroughs Corporation. Panel-type display device having display cells and auxiliary cells for operating them. 3,767,968, Cl. 315-169.0tv.

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Ohm, Edward Allen, to Bell Telephone Laboratories, Incorporated. Frequency selective polarization insensitive branching network. 3,768,039, Cl. 333-600.000.
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Okabe, Katsuhiko, to Victor Company of Japan, Ltd. Automatic and continuous tape cartridge player. 3,767,207, Cl. 274-4.00f.
Okada, Katsuto; Tomita, Mamoru; Ono, Minobu; Yamazaki, Katsuhara; and Ohkuma, Juichi, to Morinaga Nyugyo Kabushiki Kaisha. Method and apparatus for continuous demineralization in food processing plants. 3,767,548, Cl. 204-180.00p.
Okubo, Masami, to Canon Kabushiki Kaisha. Auxiliary illumination device for uniform illumination of a light receiving surface of the pick-up tube for color television. 3,767,846, Cl. 178-5.4st.
Okumura, Shinji: *See*—
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Olson, Alfred C.; and Stanley, William L., to United States of America, Agriculture. Preparation of insolubilized enzymes. 3,767,531, Cl. 195-63.000.
Olson, Cecil G., to Singer Company, The. Return spring key stem boot. 3,767,022, Cl. 197-98.000.
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Olsson, Sven Willy, to Saab-Scania Aktiebolag. Resilient connection between stem and plug of plug valve. 3,767,162, Cl. 251-84.000.
O'Mera, John F. Water control apparatus responsive to leakage or overflow conditions. 3,766,936, Cl. 137-312.000.
Omori, Toshio: *See*—
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Orange, John L. Artificial foot. 3,766,569, Cl. 3-7.000.
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Ornstein, Jacob B., to Texas Instruments, Incorporated. Composite thermostat material. 3,767,370, Cl. 29-195.500.
Orr, John L., to Keystone Consolidated Industries Inc. Spring bolt night latch. 3,767,241, Cl. 292-169.150.
Orthman, Henry K., to Orthman Manufacturing Inc. Planter marker. 3,766,987, Cl. 172-126.000.
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Orund, Valdek J.; and Cugini, Edward T., to Shaffer Tool Works. Remote controlled oil well pipe shear and shut-off apparatus. 3,766,978, Cl. 166-5.000.
Osborn, Coy D., to Williamson, T. D., Inc. Fluid tight closure. 3,766,947, Cl. 138-89.000.
Osepchuk, John M.; and Simpson, James E., to Raytheon Company. Energy seal for high frequency energy apparatus. 3,767,884, Cl. 219-10.550.
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Oszlanyi, Antal G.; Zielinski, Richard J.; and Kozak, Thomas J., to SCM Corporation. Bakery products containing polyoxalkylene derivative of propylene glycol higher fatty acid esters. 3,767,822, Cl. 99-91.000.
Ota, Isao, to Matsushita Electric Industrial Co., Ltd. Electrophoretic light image reproduction process. 3,767,392, Cl. 96-1.00r.
Otomo, Yoshiro; Yamamoto, Hajime; Nakano, Masaki; and Kano, Tsuyoshi, to Hitachi, Ltd. Infrared-excitable rare earth oxyfluoride luminescent materials. 3,767,588, Cl. 252-301.40h.
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Ott, John Nash, to Ott, John, Laboratories, Inc. Fluorescent lamp with shielded electrodes. 3,767,957, Cl. 313-109.000.
Ott, Robert W., Jr., to Rockford Servo Corporation. Control apparatus for a web positioning system. 3,767,131, Cl. 242-57.100.
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Brehm, Ronald Carl; Long, Robert Alvin; and Over, William Roderick, 3,766,622.
Overmars, Henricus Gerardus Joseph; and Van Elven, Aris, to Schering AG. Mixed metallo-organic catalysts for the polymerization of epoxy compounds and methods for the polymerization of epoxy compounds using said catalysts. 3,767,599, Cl. 260-2.00a.
Overway, Roy E., to Sealed Power Corporation. Machine for forming piston ring spacer-expanders from strip stock. 3,766,765, Cl. 72-38.000.
Owen, Thomas G., to Remington Arms Company. Orientation device. 3,767,029, Cl. 198-33.0ac.
Owens-Illinois, Inc.: *See*—
Amberg, Stephen W.; Doherty, Thomas E.; Karabedian, James A.; and Heyne, Clarence A., 3,767,496.
Kennedy, Leo J., 3,767,076.
Potter, Terry C.; and Rhoads, Roger R., 3,767,342.
Thomas, Ian M., 3,767,432.
Thomas, Ian M., 3,767,434.
Uhlig, Albert R., 3,767,747.
Oxenrider, Bryce C.; and Woolf, Cyril, to Allied Chemical Corporation. Synthetic fibers having improved soil and stain repellency. 3,767,625, Cl. 260-75.00n.
Oxysynthese: *See*—
Coingt, Michel, 3,767,779.
Ozawa, Yoshiko: *See*—
Suzuki, Hideo; Yoshida, Harumi; Ozawa, Yoshiko; Kamibayashi, Akira; Sato, Munetaka; Mori, Atsushi; and Endo, Makoto, 3,767,526.
Ozbey, Armet M. Laryngoscope with disposable blade and light guide. 3,766,909, Cl. 128-11.000.
Ozdi Kohaszati Uzemek: *See*—
Cespanyi, Sandor; Enekes, Sandor; Temesszentandrasi, Guido; Zambo, Pal; and Palmay, Zoltan, 3,767,380.
Pabich, Richard W. Safety back for cabinets. 3,768,064, Cl. 339-36.000.
Pabodie, Robert M., to Monarch Marking Systems, Inc. Printing apparatus. 3,767,098, Cl. 226-117.000.
Packaging Corporation: *See*—
Anderson, Wilbur G., 3,767,037.
Pagdin, William G.; and Risley, Robert F., to Schlitz, Jos., Brewing Company. By pass mechanism for a conveyor system. 3,767,026, Cl. 198-31.0ac.
Paige, Richard E., to Gift Box Corporation. Box cover and combination cover and box. 3,767,109, Cl. 229-43.000.
Paillou, Rene. Grape harvester. 3,766,724, Cl. 56-331.000.
Pak, Sang S.: *See*—
Chamran, Morteza M.; and Pak, Sang S., 3,767,939.
Pal, Dharam, to United States of America, Navy. Fluidic system for mixing two fluids. 3,766,945, Cl. 137-806.000.
Palecek, Vincent James, to Bunker Ramo Corporation. One piece free standing terminal. 3,768,068, Cl. 339-221.00m.
Palman, Leonard. Pushbutton switch with actuator adjustable by interference fit. 3,767,877, Cl. 200-159.00r.
Palmay, Zoltan: *See*—
Cespanyi, Sandor; Enekes, Sandor; Temesszentandrasi, Guido; Zambo, Pal; and Palmay, Zoltan, 3,767,380.
Palmer, George William: *See*—
Herpich, William A.; Chaney, Donal Warren; and Palmer, George William, 3,767,068.
Palyi, Leslie. Method and device for the processing of corn for feeding purposes. 3,766,847, Cl. 99-518.000.
Panchak, John R.: *See*—
Carroll, Felix P.; and Panchak, John R., 3,767,602.

Paoli, Angelo: *See—*
Mezey, Charles C.; and Paoli, Angelo, 3,766,969.
Pare, Robert Lee. Roadbed joint seal. 3,767,311, Cl. 404-67.000.
Pargeter, John Kenneth: *See—*
Bell, Malcolm Charles Evert; and Pargeter, John Kenneth, 3,767,383.
Parker, Brenda Mary, to National Research Development Corporation. Heat resistant polymers and reinforced plastics material produced therefrom. 3,767,611, Cl. 260-37.00r.
Parker Drilling Company, Inc.: *See—*
Houck, Theodore B., 3,767,329.
Parker, Sidney A., to Lennox Industries, Inc. Liquid sensor for reciprocating refrigerant compressor. 3,766,747, Cl. 62-226.000.
Parliment, Thomas H.; Epstein, Martin F.; Clinton, William P.; Scarpellino, Richard; and Soukup, Robert J., to General Foods Corporation. Process for flavoring foodstuffs with 2-ethyl-3-methoxypyrazine and products produced thereby. 3,767,425, Cl. 426-65.00.
Parr, Frank R.; and Weaver, Dale M., to United States of America, Air Force, mesne. Method for testing electronic circuits using variable liquid dielectric constant testing media. 3,766,639, Cl. 29-593.000.
Parr, Inc.: *See—*
Hand, Edwin C., 3,767,608.
Parson, Burton, Chemicals Inc.: *See—*
Rankin, Billy F., 3,767,788.
Parsons, Burton, & Company, Inc.: *See—*
Rankin, Billy F., 3,767,789.
Parsons, Marshall F., to Detroit Lime Company. Preheater for lime kiln. 3,766,663, Cl. 34-168.000.
Parsons, Robert H., to General Electric Company. Apparatus for soldering electrical leads to terminals on a core and coil assembly. 3,767,102, Cl. 228-37.000.
Paska, Thomas Mitchell: *See—*
Kueper, Terrance Wayne; and Paska, Thomas Mitchell, 3,767,938.
Passavant-Werke: *See—*
Auler, Herbert, 3,767,175.
Prengemann, Heinz, 3,767,048.
Patmore, Edwin L.: *See—*
Nebzydoski, John W.; Patmore, Edwin L.; and Oberender, Frederick G., 3,767,573.
Patrick, Alexander J., Jr., to Avco Corporation. Spatic bleed resistor. 3,767,971, Cl. 317-2.00r.
Pattengill, Ralph M., to Lee, Raymond, Organization, Inc., The. Automatic mail box door. 3,767,111, Cl. 232-17.000.
Patterson-Kelley Co., Inc., The: *See—*
Kirschner, Robert F., 3,766,974.
Peabody Galion Corporation: *See—*
Herpich, William A.; Chaney, Donal Warren; and Palmer, George William, 3,767,068.
Pearl, David Raymond, to Gerber Garment Technology, Inc. Methods for cutting sharp corners and notches in layups of fabric and other sheet material. 3,766,813, Cl. 83-56.000.
Pearsall, Ralph E., to USM Corporation. Profiled cellular article. 3,766,669, Cl. 30-43.000.
Pearson, R. A., Company: *See—*
Graham, Robert H., 3,766,706.
Pease, Roger Fabian Wedgwood: *See—*
Haskell, Barin Geoffrey; Limb, John Ormond; and Pease, Roger Fabian Wedgwood, 3,767,847.
Peil, William; Diano, Peter R.; Marton, Roland M.; and Watkins, Brian J., to General Electric Company. Push-button switch assembly with integral resistance for electronic tuning. 3,768,061, Cl. 338-125.000.
Pejcha, Ivan, to Information Storage Systems, Inc. Baseplate assembly for a disc drive. 3,768,083, Cl. 340-174.10c.
Pelous, Gerard P.: *See—*
Teszner, Stanislas; Lecrosnier, Daniel P.; and Pelous, Gerard P., 3,767,982.
Pelster, Edwin J.: *See—*
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Pennwalt Corporation: *See—*
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Worthington, Ralph Eric; Thompson, William Henry; Somers, Thomas Noel Enda; and Drechsel, Erhart K. (said Drechel assor. to said), 3,767,770.
Pentith, Gerald R. O., to Greenside Machine Co. Limited. Road cutting machine with laterally extensible drum and method. 3,767,262, Cl. 299-10.000.
Peppler, Richard B.; and Rosskopf, Philip A., to Martin Marietta Corporation. Cement set accelerator. 3,767,436, Cl. 106-90.000.
Perberschlager, Alois, to Maschinenfabrik Schweiter AG. Yarn spooling machine with yarn lubricating device. 3,766,886, Cl. 118-420.000.
Peret, A Company for Planning and Development of Ideals for Industry B.M.: *See—*
Sidis, Abraham; and Schneider, Haim, 3,766,932.
Pereyron, Albert: *See—*
Guth, Jean-Louis; Pereyron, Albert; and Wey, Raymond, 3,767,771.
Perisse, Pierre. Apparatus for the manufacture of patterns or models of synthetic material for precision foundry castings. 3,766,966, Cl. 164-249.000.
Perkin-Elmer Corporation, The: *See—*
Chamran, Morteza M.; and Pak, Sang S., 3,767,939.
Perkins, Glen E. Apparatus for grooving a concrete slab. 3,767,348, Cl. 425-385.000.
Perlman, Barry Stuart: *See—*
Upadhyayula, Chainulu Lakshminarasimha; and Perlman, Barry Stuart, 3,768,029.
Perlowski, John S.: *See—*
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Perrine, Walter E. Silencer for gas discharging devices employing means for reducing drag. 3,767,006, Cl. 181-49.000.
Perrino, Thomas W., to Leesona Corporation. Strand handling. 3,767,130, Cl. 242-18.0pw.
Peruglia, Marco, to Fiat Societa per Azioni. Vehicle anti-skid braking apparatus having two modes of operation. 3,767,273, Cl. 303-21.00f.
Peterson, Robert A. Foot worn two-wheeled vehicle. 3,767,220, Cl. 280-11.200.
Petranto, Michael A.: *See—*
Gnage, Oliver W.; and Petranto, Michael A., 3,767,513.
Petrick, John T. Well casing cutter and sealer. 3,766,979, Cl. 166-55.000.
Petro-Tex Chemical Corporation: *See—*
Manning, Harold E., 3,767,596.
Pettinga, Robert: *See—*
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Pezzuiti, David August, to Bell Telephone Laboratories, Incorporated. Retriggerable one-shot multivibrator. 3,768,026, Cl. 328-207.000.
Pfeuffer, Alfred; Weber, Helmut; and Joachem, Hans, to Messer Griesheim G.m.b.H. Flame cutting apparatus for bars. 3,767,178, Cl. 266-23.00k.
Pfizer Inc.: *See—*
Danilewicz, John Christopher; and Szelke, Michael, 3,767,815.
Leeming, Peter Rodway; Cross, Peter Edward; Cox, David Alexander; and Augstein, Joachim, 3,767,819.
Robertson, Robert L.; and Kasubick, Robert V., 3,767,657.
Phelps, Rex V., to Gulf Oil Corporation. Offshore liquefied gas terminal. 3,766,583, Cl. 9-8.00p.
Philadelphia Gear Corporation: *See—*
Ball, Russell C., Jr.; and Denkowski, Walter J., 3,766,803.
Phillips Petroleum Company: *See—*
Banks, Robert L., 3,767,565.
Chapman, Charles C., 3,767,727.
Cleary, James W., 3,767,707.
Cobb, Raymond L., 3,767,723.
Dix, James S.; and Reed, Jerry O., 3,767,613.
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Phoenix Products Company, Inc.: *See—*
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Pidgeon, Rosemary Sylvia Vyvyan, to Matburn (Holdings) Limited. Nasal tampons. 3,766,924, Cl. 128-325.000.
Pike, John E.; and Schneider, William P., to Upjohn Company, The. Prostaglandin El, Fl, and Al analogs. 3,767,695, Cl. 260-468.00d.
Pillsbury Company, The: *See—*
Bachman, Carl E.; Miller, Richard E.; and Smoots, Edwin H., 3,767,104.
Tsantir, Kostas; and Gorman, Roger A., 3,767,423.
Pinkerton, Martin L.; and Duderstadt, Oscar J. Manually operated vehicle mounted gun lock. 3,767,093, Cl. 224-1.00r.
Pinnow, Roy Lee: *See—*
Giesfeldt, William Otto; and Pinnow, Roy Lee, 3,767,438.
Pintenich, Brian J.: *See—*
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Pioneer Magnetics, Inc.: *See—*
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Piper, Woodrow W.; and Porter, Arthur Michael, to Du Pont de Nemours, E. I., and Company. Apparatus for forwarding tow. 3,766,606, Cl. 19-65.00t.
Pitchon, Esra: *See—*
Earle, Ernest L., Jr.; Pitchon, Esra; Schulman, Marvin; and Prasad, Ravi, 3,767,430.
Pitkethly, Robert Chalmers: *See—*
Groszek, Aleksander Jerzy; Pitkethly, Robert Chalmers; and Geach, Charles John, 3,767,750.
Pitner, Alfred, 1/2 to Nadella. Connecting means having a split collar. 3,767,235, Cl. 403-344.000.
Pittsburgh-Des Moines Steel Company: *See—*
Townsend, George R.; Price, Edmund J.; and Harper, George C., 3,768,016.

Plaw, Graeme Raymond, to Stanley Works Pty. Ltd., The. Locks. 3,767,244, Cl. 292-227.000.

Plempel, Manfred: *See—*
Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, 3,767,668.

Plockinger, Erwin; Holzgruber, Wolfgang; and Machner, Peter, to Gebr. Bohler & Co. Aktiengesellschaft. Process and apparatus for electro-slag remelting metals and in particular steel. 3,767,831, Cl. 13-12.000.

Ploppa, Jurgen: *See—*
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Pneumatiques, Caoutchouc Manufacturing et Plastiques Kleber-Colombes: *See—*
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Podesva, Ctirad; and Scott, William T., to Delmar Chemicals, Limited. 1-R, -3-(3-phthalimido-alkyloxy)-5-or-6-R-1H-indazole compounds. 3,767,670, Cl. 260-310.00c.

Podowski, Robert R., to Zenith Radio Corporation. Remote control system. 3,768,019, Cl. 325-391.000.

Polaroid Corporation: *See—*
Baker, Philip G.; and Holmes, William C., 3,767,293.
Downey, Roger B., 3,767,297.
Whall, James M., 3,766,842.

Polata, Bohumil, to Signetics Corporation. High voltage planar diode structure and method. 3,767,981, Cl. 317-235.00r.

Poley, Neil M.; Whitaker, Howard L.; and Wilson, Donald M., to International Business Machines Corporation. Protection of terminal metallurgy during working and reworking of gas discharge display devices. 3,767,282, Cl. 316-17.000.

Polityoki, Alfred; and Stoeger, Wolfgang, to Siemens Aktiengesellschaft. Method of coating plastic films with metal. 3,767,538, Cl. 204-30.000.

Polk, Norman Henry: *See—*
Foley, Eugene Burdett, Jr.; MacRae, Alfred Urquhart; Simms, Douglas Leon; Polk, Norman Henry; and White, Clark Woody, 3,767,925.

Ponzoni, George B.; Protomastro, Michael G.; and Stefanucci, Arthur, to General Foods Corporation. Process for upgrading green coffee. 3,767,418, Cl. 426-461.000.

Popiolek, Wladislas, to Kores Manufacturing Company, Limited. Method of manufacturing hectographic paper. 3,767,450, Cl. 117-36.100.

Poponiak, Michael R.: *See—*
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Portinari, Antonio: *See—*
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Pospisil, Zdenek: *See—*
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Posselt, Klaus; and Offermanns, Heribert, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Basic Thienylalkanes. 3,767,675, Cl. 260-332.30f.

Potter, Terry C.; and Rhoads, Roger R., to Owens-Illinois, Inc. Molding apparatus with article transfer and ejecting means. 3,767,342, Cl. 425-157.000.

Pouillange, Jean-Paul: *See—*
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Poulos, Panos L., to Velsicol Chemical Corporation. Method of increasing the recoverable sugar from sugar cane. 3,767,377, Cl. 71-107.000.

Powell, David S.; and Weeks, Charles B., to Norris Industries, Inc. Alarm attachable to a door. 3,768,086, Cl. 340-274.000.

Powell, Patrick L., to Stewart-Warner Corporation. Bicycle speedometer casing assembly. 3,766,948, Cl. 138-109.000.

Pozzetti, Mario, to Finike Italiana Morposs Soc. in Accomandita Samplice di Mario Possati & Co. Device for detecting irregularities in the shape of a workpiece during machining. 3,768,010, Cl. 324-103.00p.

Prab Conveyors, Inc.: *See—*
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Pravda, Milton F.; and Bienert, Walter B. Heat sinks. 3,766,977, Cl. 165-47.000.

Prave, Paul: *See—*
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Preferred Utilities Manufacturing Corporation: *See—*
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Prener, Jerome S.: *See—*
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Prengemann, Heinz, to Passavant-Werke. Method and apparatus for filtering liquid. 3,767,048, Cl. 210-77.000.

Presto Lock Company, Division of Walter Kidde & Co., Inc.: *See—*
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Preston Engravers, Inc.: *See—*
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Priaroggia, Paolo Gazzana; and Portinari, Antonio, to Industrie Pirelli Societa per Azioni. Helical waveguide. 3,768,049, Cl. 333-95.00r.

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Priest, Wayne A.; and Weigand, Arthur D., to Dutton-Lainson Company. Winch power module with gear disconnect. 3,766,795, Cl. 74-405.000.

Princeton Electro Dynamics, Inc.: *See—*
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Procter & Gamble Company, The: *See—*
Burke, Claude E., 3,767,429.
Dulle, Bernard A., 3,766,921.
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Probofsky, Leroy A. Electronic frequency measuring apparatus. 3,766,818, Cl. 84-454.000.

Prosser, Alan Philip: *See—*
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Protomastro, Michael G.: *See—*
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Prucha, Richard V.; and Bowling, Teamus, to General Electric Company. Plug-in surface heating unit with a terminal block mounting. 3,767,897, Cl. 219-451.000.

Pryor, Richard Lee, to RCA Corporation. Multifunction full adder. 3,767,906, Cl. 235-175.000.

Puhk, Heino, to SCM Corporation. Photopolymerization using triorgano-substituted phosphine and sulfonyl halides as a photoinitiator. 3,767,547, Cl. 204-259.230.

Pund, Francis X.; and Lippert, Ralph E., to Jergens, Andrew, Company, The. Adjustable guide assembly for feeding bottles and the like to a horizontal moving platform. 3,767,027, Cl. 198-32.000.

Purrer, Josef: *See—*
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Quantz, Norman G., to Lectron Products Inc. Solenoid operated door lock. 3,767,242, Cl. 292-216.000.

Quenot, Andre, to Manufacture Quenot Mabo S.a.r.l. Support device for plumb-line. 3,766,659, Cl. 33-392.000.

Quick, Lester K. Refrigeration system with plural evaporator means. 3,766,745, Cl. 62-196.000.

Racine Railroad Products, Inc.: *See—*
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Radcliffe, Arthur J., Jr., to Burroughs Corporation. Correlation measurement apparatus. 3,767,907, Cl. 235-181.000.

Radiant Devices Incorporated: *See—*
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Raduner and Co., A.G.: *See—*
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Schuller, Eduard; Dickopp, Gerhard; and Rainer, Wolfgang, 3,767,865.

Ramaswamy, Ramanathan; and Vandergraaf, Johannes J., to General Electric Company. Noise squelch circuit for power line carrier systems. 3,768,021, Cl. 325-478.000.

Ramsey, William R.; West, Phillip B.; Fields, Charles E.; and Smith, Robert E. Torpedo recovery device. 3,766,880, Cl. 114-241.000.

Randall, Robert Paul, to EMI Limited. Arrangements including image intensifier devices. 3,767,961, Cl. 315-11.000.

Rank Organisation Limited, The: *See—*
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Rankin, Billy F., to Parson, Burton, Chemicals Inc. Ophthalmic solution. 3,767,788, Cl. 424-78.000.

Rankin, Billy F., to Parsons, Burton, & Company, Inc. Method of providing a synthetic mucus in vivo. 3,767,789, Cl. 424-78.000.

Rasmussen, Howard C. Portable fence panel. 3,767,167, Cl. 256-26.000.

Rasmussen, Svend Jorgen, to Damas Jens Nielsens Maskinfabrik A/S. Apparatus for screening seed and the like materials. 3,767,047, Cl. 209-240.000.

Rastelli, Telesfore, to Textron, Inc. Multiple roll bridle system. 3,766,767, Cl. 72-249.000.

Ratheiser, Heinz: *See—*
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Rauch, Francois, to Roussel-UCLAF. Synergistic insecticides. 3,767,806, Cl. 424-278.000.

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Rault, Patrick, to Sodeco Societe des Compueurs de Geneve S.A. Connector for insulated flat cable. 3,768,067, Cl. 339-99.00r.

Rawson, Edward B.; Murphy, William J., Jr.; Schwarzkope, Daniel B.; and Dowling, John B., to Searle Medidata Inc. Entry confirming input terminal. 3,768,073, Cl. 340-172.500.

Ray, George D. Convertible pool enclosure. 3,766,691, Cl. 52-71.000.

Ray-Ban Solarscreen, Inc.: *See—*
Cozzens, Jerold E., 3,766,565.

Raymond, Charles B.; and Just, Bernard L. Apparatus for making concrete slabs. 3,767,312, Cl. 404-106.000.

Raymond International, Inc.: *See—*
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Raytheon Company: *See—*
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RCA Corporation: *See—*
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Baltzer, Philip K., 3,767,581.
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Campbell, Thomas Herbert; Schnitzler, Paul; and West, Laurice Juston, 3,768,047.
Ettenberg, Michael; and Cannuli, Vincent Michael, 3,767,481.
Harrison, Sol Esther; and Goldmacher, Joel Edward, 3,767,408.
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Moorehead, Harvey; Reading, George R.; and Smith, Silas S., 3,766,916.

Reaves, Harry D. Harpoon-flying gaff. 3,766,678, Cl. 43-6.000.

Reber, Robert L.; and Duncan, David M., to Communications Transistor Corporation. Microwave hermetic transistor package. 3,767,979, Cl. 317-234.00r.

Recoque, Alice Maria, to Compagnie Internationale pour l'Informatique. Multiple peripheral coupled data processor system. 3,768,076, Cl. 340-172.500.

Rederiaktiebolaget Nordstjernan: *See—*
Svanstrom, Ellis Kjell Ake, 3,767,761.

Redlich, Horst: *See—*
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Reed, Jerry O.: *See—*
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Rees, Herbert, to Husky Manufacturing & Tool Works, Limited. Injection mold with unloading mechanism. 3,767,352, Cl. 425-441.000.

Reeves, Wilson A.: *See—*
Calamari, Timothy A., Jr.; Reeves, Wilson A.; Schrieber, Sidney P.; and Cooper, Albert S., Jr., 3,767,359.

Refrigeration Research, Inc.: *See—*
Bottum, Edward W.; and Kozinski, Richard C. (said Bottum assor. to), 3,766,748.

Regel, Erik K.: *See—*
Buchel, Karl-Heinz; Regel, Erik K.; and Plempel, Manfred, 3,767,668.

Reh, Lothar; and Melzer, Carl-August, to Metallgesellschaft A.G. and Deutsche Babcock & Wilcox A.G. Process for recovering phosphorus compounds. 3,767,768, Cl. 423-304.000.

Rehklau, George D.; and De Long, Cecil W., to Electro Sound Incorporated. Cassette to cassette duplicating means. 3,767,206, Cl. 274-3.000.

Rehm, Russell L.: *See—*
Goshy, Allyn N.; and Rehm, Russell L., 3,768,008.

Rehoski, Charles J.: *See—*
Csathy, Denis G.; Hung, Wendell L. Y.; Rehoski, Charles J.; and Heath, Jon M., 3,766,891.

Reiber, Heinz-Joachim: *See—*
Ackermann, Karl; Uecker, Siegfried; Socha, Rudolf; and Reiber, Heinz-Joachim, 3,767,908.

Reichle, Walter T., to Union Carbide Corporation. Halogenated diamino diphenyl sulfone derivatives. 3,767,686, Cl. 260-397.600.

Reifers, Richard F., to Diamond International Corporation. Egg carton cells for jumbo-sized eggs. 3,767,103, Cl. 229-2.500.

Reilly, James William: *See—*
Sze, Morgan Chuan-Yuan; and Reilly, James William, 3,767,562.

Reimer, George R., to General Mills, Inc. Glaze frosting mixes. 3,767,830, Cl. 99-139.000.

Reiner, Norbert L., to Coleco Industries, Inc. Filtration system for liquids. 3,767,050, Cl. 210-169.000.

Reinhart, Joan; Stump, Warren E.; and Davidson, Julian S., to United States of America, Navy. Nitrasol propellant. 3,767,489, Cl. 149-18.000.

Reinsch, Herbert, to Bosch, Robert, Photokino G.m.b.H. Motion picture camera with means for making "time" exposures. 3,767,298, Cl. 352-169.000.

Reitman, Abraham Isadore. Float valve improvement. 3,766,939, Cl. 137-434.000.

Reitsma, Jagchum; and Sanders, Johannes Reinier Maria, to U.S. Philips Corporation. Extensible microprogram store. 3,768,075, Cl. 340-172.500.

Reliable Attachment Company: *See—*
Weigert, Karl, 3,766,870.

Remington Arms Company: *See—*
Owen, Thomas G., 3,767,029.

Repinski, Robert. Projectile type toy for projecting electrostatically carried projectiles. 3,766,902, Cl. 124-13.00r.

Rexford, Harry E.; and Harvey, Douglas G., to Sanders Nuclear Corporation. Radioisotopic noncontaminating fuel capsule loading systems. 3,766,951, Cl. 141-37.000.

Rexroth, G. L., G.m.b.H.: *See—*
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Reynard, Remi: *See—*
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Rheiner, Alfred, Jr.: *See—*
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Rhoades, John S., to Kaiser Aluminum & Chemical Corporation. Pilfer-proof closure cap. 3,767,077, Cl. 215-42.000.

Rhoads, Roger R.: *See—*
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Ribka, Joachim: *See—*
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Richards, Sumner F., Jr.; and Biechler, Charles S. Shelter structure. 3,766,693, Cl. 52-71.000.

Richardson Company, The: *See—*
Sullivan, Robert D.; and Jutte, Gottfried W., 3,767,156.

Richardson, Garland D.: *See—*
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Richle, Rolf: *See—*
Burkaro, Willy; Rheiner, Alfred, Jr.; and Richle, Rolf, 3,767,804.

Richt, Oskar Hubert; and Liebl, Albert, to Uher Werke Munchen. Drive device for tape recorders. 3,767,137, Cl. 242-206.000.

Riley, Bruce G. Practice pommel horse assembly. 3,767,191, Cl. 272-64.000.

Rinehart, Dean C., to General Electric Company. Hermetically sealed compressor assembly. 3,767,334, Cl. 418-248.000.

Ring, Charles Martin, to Motorola, Inc. Bridge amplifier suitable for manufacture in monolithic integrated circuit form. 3,768,031, Cl. 330-15.000.

Ring, Theodore C.: *See—*
Bunting, Robert L., Jr.; Ring, Theodore C.; D'Amato, Joseph; and Wojcik, Witold M., 3,766,961.

Rinkler, Heinrich-August: *See—*
Engelhard, Helmut; Rinkler, Heinrich-August; and Nischk, Gunther, 3,767,631.

Rio, Michel, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Individual respirators containing compositions based on potassium superoxide. 3,767,367, Cl. 23-281.000.

Risany, Joseph J.: *See—*
Urbutis, Algimantas P.; Schenk, Bernard H.; Risany, Joseph J.; and Marbach, Walter V., 3,766,603.

Risius, George. Trailer stand leg position indicator. 3,768,088, Cl. 340-282.000.

Risley, Robert F.: *See—*
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Ritchie, David Alan; and Beckham, David Scott, to Sherwood Medical Industries Inc. Reagent pipette system. 3,767,364, Cl. 23-259.000.

Ritchie, George Douglas V., to Goodrich, B. F., Company, The. Apparatus for curing endless elastomeric belts. 3,767,337, Cl. 425-288.000.

Ritmar Corporation: *See—*
Jensen, Howard Martin, 3,767,217.

Rivarossi S.p.A.: *See—*
Rossi, Alessandro, 3,767,114.

Riwisa A.G. Kinststoffwerke Hagglingen: *See—*
Wehrli, Zeno, 3,767,344.

Roberts, Edward H., to General Electric Company. Handle assembly. 3,766,598, Cl. 16-125.000.

Roberts, Thomas Ernest Edwin, to Lucas, Joseph, (Industries) Limited. Apparatus for temperature measurement. 3,766,781, Cl. 73-355.00r.

Roberts, William E.; Whitney, Ronald L.; and Wickenhiser, Ronald C., to Terminal Data Corporation. Microfiche camera. 3,767,302, Cl. 355-53.000.

Roberts, William H.: *See—*
Black, Millard G.; Nater, Robert A.; Rolston, Charles E.; Roberts, William H.; Hoover, Edward D.; Gunning, William F.; and King, Robert P., 3,767,901.

Robertson, Robert L.; and Kasubick, Robert V., to Pfizer Inc. Process for the preparation of quinoxaline-di-N-oxides. 3,767,657, Cl. 260-250.00r.

Robin, Maurice Henry, to Imperial Chemical Industries Limited, mesne. Process of injection molding a hinged article having foam cored members joined by an unfoamed hinge. 3,767,742, Cl. 264-45.000.

Robins, A. H., Company, Incorporated: *See*—
Stroop, John Harry, 3,766,666.

Robinson, Bernie E., to Milwaukee Valve Company, Inc. Throttle-shutoff valve. 3,767,164, Cl. 251-122.000.

Robinson, Leon H.: *See*—
Heilhecker, Joe K.; and Robinson, Leon H., 3,766,997.

Robinson, Russell S., to Colt Industries Operating Corporation. Cartridge feeder. 3,766,825, Cl. 89-33.0sf.

Roblin Industries, Inc.: *See*—
Bunting, Robert L., Jr.; Ring, Theodore C.; D'Amato, Joseph; and Wojcik, Witold M., 3,766,961.

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Rockwell International Corporation: *See*—
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Roderick, William R.: *See*—
Schleicher, Joseph Bernard; and Roderick, William R., 3,767,795.

Rodgers, James L., to Talos Systems Inc. Apparatus for converting the position of a manually operated instrument into an electrical signal. 3,767,858, Cl. 178-18.000.

Roerig, Arnold J., to Beloit Corporation. Controlled deflection roll drive. 3,766,620, Cl. 29-115.000.

Rogers, Alter C., Jr.; and Snitzer, Morton, to Cleveland Chair Company, Inc. Handle controlled recliner rocker lounger. 3,767,257, Cl. 297-85.000.

Rogers, Edward A., to Wilkinson Sword Limited. Hand tools, particularly for gardening. 3,767,249, Cl. 294-49.000.

Rohm & Haas Company: *See*—
Albright, Robert L., 3,767,600.

Rohm and Haas Company: *See*—
Moss, Jack N.; and Sambuca, Albert S., 3,767,816.

Rohr Industries, Inc., mesne: *See*—
Shepard, Robert W., 3,767,441.

Roldes, Peter, to RCA Corporation. Wideband hybrid system. 3,768,043, Cl. 333-6.000.

Roller, Robert L.: *See*—
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Rolston, Charles E.: *See*—
Black, Millard G.; Nater, Robert A.; Rolston, Charles E.; Roberts, William H.; Hoover, Edward D.; Gunning, William F.; and King, Robert P., 3,767,901.

Romak, Albert. Tie rod adjustment tool. 3,766,810, Cl. 81-90.00r.

Roman, Michael A., Sr. Smoking pipe cartridge production apparatus. 3,766,929, Cl. 131-119.000.

Rorer, William H., Inc.: *See*—
Diamond, Julius; and Douglas, George H., 3,767,656.

Rosenberg, William E., to Hull, R. O., & Company, Inc. Additive for electrodeposition of bright zinc from aqueous, acid, electroplating baths. 3,767,540, Cl. 204-55.00r.

Rosenburg, Charles W., Jr.; Byrne, Arthur J.; and Mulvany, Marshall, to Burt, F. N., Company, Inc. Paper feeding device. 3,767,188, Cl. 271-145.000.

Rosenthal, Arthur, to Long Island Jewish Medical Center, The. Apparatus for sample application in thin layer and paper chromatography. 3,766,884, Cl. 118-58.000.

Rosette, King H., to Kewanee Oil Company. Process of extrusion without distortion of extrudate. 3,767,748, Cl. 264-89.000.

Ross, Bernard D.: *See*—
Ross, Bernard D.; and Limon, Jose P. (said Limon assor. to said), 3,766,764.

Ross, Bernard D.; and Limon, Jose P., said Limon assor. to said Ross, Bernard D. Automatic pipe bender. 3,766,764, Cl. 72-22.000.

Rossi, Albert; Tornqvist, Erik; Jacobson, Norman; and Song, Won Ryol, to Esso Research and Engineering Company. Alpha-olefin polymers as dewaxing aids. 3,767,561, Cl. 208-37.000.

Rossi, Alessandro, to Rivarossi S.p.A. Device for retaining rails of miniature trains. 3,767,114, Cl. 238-10.00e.

Rossi, Irving. Method of continuously casting a slab. 3,766,962, Cl. 164-82.000.

Rossi, Irving, to Innocenti Santeusatacchio S.p.A. Continuous casting methods and apparatus. 3,766,963, Cl. 164-89.000.

Rossi, Renato: *See*—
Mast, Fred; Rossi, Renato; La Roche, Ulrich; and Knus, Jean A., 3,767,306.

Rosskopf, Philip A.: *See*—
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Roussel-UCLAF: *See*—
Nedelec, Lucien; Guillaume, Jacques; and Allais, Andre, 3,767,676.
Rauch, Francois, 3,767,806.

Roveti, Denes. Receptacle testing device. 3,766,777, Cl. 73-141.0ab.

Rowe, Murray Edwin, to Ainsley-Park Industries Ltd. Silver recovery system. 3,767,558, Cl. 204-269.000.

Rowe, Thomas H., to International Business Machines Corporation. Manually positionable automatic printer. 3,767,020, Cl. 197-1.00r.

Rowe, William A.; and Schwartz, James W., to Zenith Radio Corporation. Multiple exposure color tube screening. 3,767,395, Cl. 96-36.100.

Rowland, David L. Seating and sub-assembly for seats and backs and method for making same. 3,767,261, Cl. 297-452.000.

Ruane, George W.; and Tracy, George W., Jr. Tire structure. 3,766,956, Cl. 152-208.000.

Rubery, Owen & Co. Limited: *See*—
Ward, Peter Thomas, 3,767,250.

Rubricius, Jeanette Lois, to Eljay Hospital Products Corporation, mesne. Surgical clamp with cam action lever. 3,766,925, Cl. 128-346.000.

Rufle, George G.: *See*—
Rufle, George H.; and Rufle, George G., 3,767,296.

Rufle, George H.; and Rufle, George G. Apparatus for making animated motion pictures or the like. 3,767,296, Cl. 352-87.000.

Ruiz, Rene A. Anti-pollution and hydromogenization. 3,766,716, Cl. 55-223.000.

Rundt, Ronald J., to Amoco Production Company. Sand screen sand saver. 3,766,981, Cl. 166-202.000.

Rus, Pieter Jan; Le Poole, Jan Bart; and Kramer, Johannes, to U.S. Philips Corporation. Electron beam apparatus with beam-stabilisation system. 3,767,927, Cl. 250-311.000.

Russ, Paul E., Sr., to Gates Rubber Company, The. Stiffener and traction element for endless track. 3,767,275, Cl. 302-38.000.

Rutkiewic, Andrew F., to Du Pont de Nemours, E. I., and Company. Process for preparing stable aqueous solutions of N-halo compounds. 3,767,586, Cl. 252-187.00h.

Rutowski, Philip R. Aligning device for tractor hitches. 3,767,292, Cl. 350-293.000.

Ryan, David E.: *See*—
Oberto, Edwin L.; Ryan, David E.; and Wiltberger, Jon C., 3,767,118.

Ryan, John Justin. Frying pan with a welded hollow-care expansion joint. 3,767,896, Cl. 219-438.000.

Rychlik, Frank J., to Illinois Tool Works Inc. Plastic needle holder. 3,766,915, Cl. 128-214.400.

S & S Corrugated Paper Machinery Co., Inc.: *See*—
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S.A. Texaco Belgium N.V.: *See*—
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Saab-Scania Aktiebolag: *See*—
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Sahagun, Armen N. Method for producing improved PN junction. 3,767,485, Cl. 148-188.000.

Saito, Katutoshi: *See*—
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Saito, Sadakatsu: *See*—
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Saito, Seiichi: *See*—
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Saito, Yoshihisa: *See*—
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Saivosalmi, Risto: *See*—
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Sakamoto, Takayuki: *See*—
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Sakurai, Testuo: *See*—
Sano, Ichiro; and Sakurai, Testuo, 3,767,889.

Salomonsson, Hans Manne Alvar, to Aktiebolaget Bofors. Device for achieving aim-off for a firearm. 3,766,826, Cl. 89-41.00b.

Sambuca, Albert S.: *See*—
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Samuelian, Maurice P.: *See*—
Valbona, Bruno M.; Emmons, Robert J.; and Samuelian, Maurice P., 3,766,595.

Samuelsson, Bengt. Esters of 19-hydroxy prostaglandin A2. 3,767,693, Cl. 260-468.00d.

Samuelsson, Bengt. Esters of 19-hydroxy prostaglandin A1. 3,767,696, Cl. 260-468.00d.

Samuelsson, Bengt. Esters of 19-hydroxy prostaglandin B_1. 3,767,697, Cl. 260-468.00d.

Samuelsson, Bengt. Esters of 19-hydroxy prostaglandin B2. 3,767,698, Cl. 260-468.00d.

Samuelsson, Bengt. 19-Hydroxy prostaglandin B2. 3,767,700, Cl. 260-514.00d.

Samuelsson, Bengt. 19-Hydroxy prostaglandin B1. 3,767,701, Cl. 260-514.00d.

Samuelsson, Bengt. 19-Hydroxy prostaglandin A2. 3,767,702, Cl. 260-514.00d.

Samuelsson, Bengt. 19-Hydroxy prostaglandin A1. 3,767,703, Cl. 260-514.00d.

Samuelsson, Bengt. Use of prostanoic acid derivatives to control platelet aggregation. 3,767,813, Cl. 424-318.000.

San Filipo, Frank J. Weed extracting device. 3,767,251, Cl. 294-50.800.

Sandefer, Kyle, to Brown & Root. Trash removal system. 3,767,074, Cl. 214-628.000.

Sanders Associates, Inc.: *See*—
Hayner, Paul F., 3,766,832.

Stapleford, Gary N.; and Tellier, Robert E., 3,768,082.

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Sandoz-Wander, Inc.: *See—*
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Sankyo Company, Limited: *See—*
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Sano, Ichiro; and Sakurai, Testuo, to Matsushita Electric Industrial Co. Ltd. Method of making intercell connections in storage battery. 3,767,889, Cl. 219-137.000.

Sansui Electric Co., Ltd.: *See—*
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Santano, Kazunori: *See—*
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Santoro, Joseph F.: *See—*
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Sapir, Saio, to International Telephone and Telegraph Corporation. Voltage to current converter. 3,766,746, Cl. 62-223.000.

Sarbacher, Robert I.: *See—*
Bogue, John C.; and Sarbacher, Robert I., 3,767,933.

Sarkees, Henry R., to General Motors Corporation. Sunshade support assembly. 3,767,256, Cl. 296-97.00k.

Sasaki, Katsuyoshi: *See—*
Fukuoka, Yohei; and Sasaki, Katsuyoshi, 3,767,644.

Sasaki, Kyoichi; Isohata, Susumu; Kato, Masaaki; and Murakoshi, Masahiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for producing basic aluminum chloride. 3,767,549, Cl. 204-180.00p.

Sato, Masamichi; and Fukushima, Osamu, to Fuji Photo Film Co., Ltd. Developing device for electrostatic latent image. 3,766,887, Cl. 118-637.000.

Sato, Munetaka: *See—*
Suzuki, Hideo; Yoshida, Harumi; Ozawa, Yoshiko; Kamibayashi, Akira; Sato, Munetaka; Mori, Atsushi; and Endo, Makoto, 3,767,526.

Sato, Yoshiaki; Kagami, Kamoto; Motaki, Shigeroku; and Mitsukawa, Masakazu, to Japanese National Railway and Kabushiki Kaisha Mitsukawa Tekkosho. Method of manufacturing forged crossing. 3,766,770, Cl. 72-340.000.

Satomura, Masato: *See—*
Hayakawa, Yoshihide; and Satomura, Masato, 3,767,400.

Saubestre, Edward Basil: *See—*
Fadgen, Earl Joseph, Jr.; and Saubestre, Edward Basil, 3,767,583.

Sautel, Auguste A.: *See—*
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Savin Business Machines Corporation: *See—*
Brown, Paul I.; and Brown, Arlie L., 3,767,300.

Sawabe, Shigeji; Genda, Yoshikazu; Yamamoto, Takeo; Masuyama, Kazuyoshi; and Takebayashi, Michinori, to Nippon Soda Co., Ltd. Stable solvent composition. 3,767,585, Cl. 252-171.000.

Sawhney, Ramesh, to Burroughs Corporation. Data set tester. 3,767,856, Cl. 178-69.00a.

Sayell, Emerson H., to United States of America, Atomic Energy Commission. Radioisotopic heat source. 3,767,930, Cl. 250-493.000.

Scandia Packaging Machinery Company: *See—*
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Scarlet, Ted. Method of making a pennant. 3,766,854, Cl. 101-426.000.

Scarpellino, Richard: *See—*
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Schaltenbrand, Eugene D., to American Air Filter Company, Inc. Fabric tube type dust collector method. 3,766,712, Cl. 55-96.000.

Schatz, Hermann: *See—*
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Scheijen, Wilhelmus G.: *See—*
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Scheitlin, George E.; and Hanson, Gene Richard, to Arvin Industries, Inc. Method of interconnecting a tube to a plate. 3,766,631, Cl. 29-424.000.

Schenk, Bernard H.: *See—*
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Schering AG: *See—*
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Overmars, Henricus Gerardus Joseph; and Van Elven, Aris, 3,767,599.

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Schieber, Hans; and Krause, Erich, to Universal Maschinenfabrik Dr. Rudolf Schieber G.m.b.H. Switchable lock for knitting machines. 3,766,754, Cl. 66-78.000.

Schiesser, Henry: *See—*
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Schiff, Sidney, to Phillips Petroleum Company. Gasoline additive. 3,767,574, Cl. 252-51.000.

Schindler, Hector; and Schmid, Erich, to Ciba-Geigy Corporation. Imidazolidinone derivatives in controlling psycho-somatic disturbances. 3,767,796, Cl. 424-250.000.

Schinner, Edward N.: *See—*
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Engalitcheff, John, Jr.; Bradley, Wilson E., Jr.; and Schinner, Edward N., 3,767,177.

Schlatter, Hugo, to Hercules Incorporated. Saddle lock-up for flexible printing plates. 3,766,857, Cl. 101-415.100.

Schlaudt, Charles M.; Clendenen, Ronald L.; and Olson, Eugene E., to Shell Oil Company. Process for preparing a ductile metal ferrite. 3,766,642, Cl. 29-608.000.

Schleicher, Joseph Bernard; and Roderick, William R., to Abbott Laboratories. Method for combating certain virus infection. 3,767,795, Cl. 424-212.000.

Schlitz, Jos., Brewing Company: *See—*
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Schlunke, Hans-Peter; and Egli, Christian, to Ciba-Geigy AG. Photographic colour material. 3,767,402, Cl. 96-53.000.

Schmacher, Hans: *See—*
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Schmid, Rolf: *See—*
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Schmidgall, Philip L., to Mallory, P. R., & Co. Inc. Timer for an appliance. 3,767,937, Cl. 307-133.000.

Schmidt, Donald L.: *See—*
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Schnattinger, Walter Ludvig; Seelos, Albert; Mayer, Heinz; Oelmayer, Reinhold; Dueli, Josef; Hertl, Wilhelm; Koch, Hans-Jorg; and Stock, Hans-Joachim, to Morat, Franz, G.m.b.H., Firma. Device for scanning a drawing and for printing a drawing paper with a crresponding pattern. 3,767,844, Cl. 178-5.20r.

Schneeweiss, Manfred, to Audi Nsu Auto Union Aktiengesellschaft. Rear axle for motor cars. 3,767,224, Cl. 280-124.00b.

Schneider, Haim: *See—*
Sidis, Abraham; and Schneider, Haim, 3,766,932.

Schneider, Julius L., to Continental Can Company, Inc. Rubber sealant composition. 3,767,607, Cl. 260-27.0bb.

Schneider, Leo, to Schneider, Wm., Inc. Jewel-setting apparatus. 3,766,809, Cl. 81-7.000.

Schneider, William P.: *See—*
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Schneider, Wm., Inc.: *See—*
Schneider, Leo, 3,766,809.

Schneikart, Paul E.; Murdock, Roy C.; and Day, Job H., to Texas Instruments, Incorporated. Diaphragm type pushbutton setting switch with fixed contact semiconductor substrate support. 3,767,875, Cl. 200-52.00r.

Schnitzler, Paul: *See—*
Campbell, Thomas Herbert; Schnitzler, Paul; and West, Laurice Juston, 3,768,047.

Schnurrer, Hans, to Meyer & Cie Maschinenfabrik. Control apparatus for resetting pattern drums. 3,766,753, Cl. 66-50.00b.

Schoen, Donald W.: *See—*
Donnelly, Thomas G.; Haueter, James A.; Krisko, William J.; Schoen, Donald W.; and Lind, Chester S., 3,766,844.

Schoen, Lowhardt A. A., to Stamicarbon N.V. Preparation of polylactones having ester end groups. 3,767,627, Cl. 260-78.30r.

Scholten, Joseph J. F.: *See—*
Geus, John W.; Nobel, Adriaan P. P.; Scholten, Joseph J. F.; and Scheijen, Wilhelmus G., 3,767,772.

Schrader, Paul D.: *See—*
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Calamari, Timothy A., Jr.; Reeves, Wilson A.; Schrieber, Sidney P.; and Cooper, Albert S., Jr., 3,767,359.

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Schroter, Carl, to Hermann, Heinrich. Sectionally subdivided bilateral sticker tape roll. 3,767,039, Cl. 206-59.00c.

Schubert, Walter A., to Elgin Metal Casket Company. Method of oxidizing tin and treatment. 3,767,475, Cl. 148-6.140.

Schueler, Donald R.: *See—*
Norfleet, William V.; Sibbach, Wilmer Charles; and Schueler, Donald R., 3,766,630.

Schuller, Eduard; Dickopp, Gerhard; Rainer, Wolfgang; Redlich, Horst; and Klemp, Hans-Joachim, to Licentia Patentverwaltungs-G.m.b.H. and Teldec-Telefunken Decca Schallplattera G.m.b.H. Positively guided disc record pickup. 3,767,848, Cl. 178-6.60r.

Schuller, Eduard; Dickopp, Gerhard; and Rainer, Wolfgang, to Licentia Patentverwaltungs-G.m.b.H. High speed foil disc recording systems. 3,767,865, Cl. 179-100.40r.

Schuller, Mary F.; and Abrahamson, Ernest P., to United States of America, Army. Titanium beta S-alloy. 3,767,480, Cl. 148-32.500.

Schulman, Marvin: *See—*
Earle, Ernest L., Jr.; Pitchon, Esra; Schulman, Marvin; and Prasad, Ravi, 3,767,430.

Schuman, Mark. Free piston pump. 3,767,325, Cl. 417-207.000.

Schur, Ronald J.: *See—*
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Schuster, James B., to Gulton Battery Corporation. Air-cooled battery. 3,767,468, Cl. 136-166.000.

Schwager, Irving, to Texaco Inc. Process for alkylating alkyl benzenes. 3,767,722, Cl. 260-668.00b.

Schwardt, David N., to Eastman Kodak Company. Mount sealing apparatus. 3,766,621, Cl. 29-200.00b.

Schwartz, James W.: *See—*
Rowe, William A.; and Schwartz, James W., 3,767,395.

Schwartz, Norman Larry, to Multiplex Communications Inc. Solid state relay. 3,767,942, Cl. 307-257.000.

Schwarz, Eckhard C. A., to Kimberly-Clark Corporation. Synthetic paper base and method of manufacture. 3,767,523, Cl. 161-754.000.

Schwarzkope, Daniel B.: *See—*
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SCM Corporation: *See—*
Albright, James A.; and Dorschner, Kenneth P., 3,767,699.
Bordenca, Carl, 3,767,785.
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Oszlanyi, Antal G.; Zielinski, Richard J.; and Kozak, Thomas J., 3,767,822.
Puhk, Heino, 3,767,547.

Scoggins, Lacey E., to Phillips Petroleum Company. Copolymerization of chlorotrifluoroethylene and ethylene using a redox catalyst. 3,767,634, Cl. 260-87.50a.

Scott Paper Company: *See—*
Knusko, Evelyn H., 3,766,922.

Scott, William T.: *See—*
Podesva, Ctirad; and Scott, William T., 3,767,670.

Scribner, Richard M., to Du Pont de Nemours, E. I., and Company. Process for the preparation of 6,6-difluoro-11 beta, 17 alpha, 21-trihydroxypregn-4-ene-3,20-dione and of its 16-methyl homologs. 3,767,684, Cl. 260-397.400.

Scruggs, James A.: *See—*
Kraus, Theodore C.; Scruggs, James A.; and Trotz, Samuel I., 3,767,781.

Seal, Glendon E.; and Arford, Willis R. Electric wiring box positioner. 3,767,151, Cl. 248-205.00r.

Sealed Power Corporation: *See—*
Overway, Roy E., 3,766,765.

Seals, William O., to United States of America, Army. Pressure sensitive explosive with organosilane coating. 3,767,488, Cl. 149-7.000.

Searle, G. D., & Co.: *See—*
Cusic, John W.; and Deason, James R., 3,767,683.

Searle Medidata Inc.: *See—*
Rawson, Edward B.; Murphy, William J., Jr.; Schwarzkope, Daniel B.; and Dowling, John B., 3,768,073.

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Seddon, William L.: *See—*
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Sedgwick, Thomas O.: *See—*
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Seehawer, Eberhard, to Bogen, Wolfgang, GmbH, Firma. Arrangement for the precise positioning of magnetic heads. 3,767,209, Cl. 274-4.00r.

Seelos, Albert: *See—*
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Segal, Herbert A. Retarded vaporization compositions and method for making. 3,767,787, Cl. 424-76.000.

Seiderman, Maurice. Contact lenses from hydrophilic gel polymers of polvinylpyrrolidone nonomeric vinylpyrrolidone and methacrylic modifier. 3,767,731, Cl. 260-885.000.

Seim, Orville S.; Filewicz, Erwin C.; and Hutter, Ernest, to United States of America, Atomic Energy Commission. Irradiation subassembly. 3,767,525, Cl. 176-15.000.

Seiz, Edward A. Folding bed for a storage rack. 3,767,059, Cl. 211-149.000.

Sekera, George F., Jr., to Harper-Wyman Company. Control system and valve structure for gas ovens. 3,766,905, Cl. 126-42.000.

Sekira, Peter; and Bayer, Helmut, to Electrovac Fabrikation elektrotechnisaher Spezialartikel Gesellschaft m.b.H. Thermal switch with small switching temperature difference. 3,768,057, Cl. 337-345.000.

Selker, Milton L., to Gould Inc., mesne. Method and apparatus for continuous production of nickel foil. 3,767,537, Cl. 204-13.000.

Selleck, Albert B. Container of a malodorous warning liquid for malfunctioning mine ventilation. 3,767,591, Cl. 252-408.000.

Send Engineering, Ltd.: *See—*
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Senel, Josef: *See—*
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Sennowitz, Kurt H., to Colt Industries Operating Corporation. Electrical discharge machining power supply with protective system for output switch failure. 3,767,886, Cl. 219-69.00s.

Serezac, Daniel J.: *See—*
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Servo Corporation, mesne: *See—*
Stites, Francis H., 3,768,023.

Servo Corporation of America: *See—*
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Settlemyer, Bernard W., to Ajax Magnethermic Corporation, mesne. Adsorption gas drying method and apparatus. 3,766,660, Cl. 34-9.000.

Shacklock, Roger M., to Thackray, Chas. F., Limited. Stethoscopes. 3,767,003, Cl. 181-24.000.

Shaffer Tool Works: *See—*
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Shannon, Henry D. Modular dispenser for condiments and similar items. 3,767,087, Cl. 222-144.00s.

Sharon Manufacturing Company: *See—*
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Sharp, Richard A.; McGrew, Jay L.; Gille, John P.; Mowrey, Eugene C.; and Buskirk, David L., to Martin Marietta Corporation. Method of making capillary insulation panels. 3,767,498, Cl. 156-94.000.

Sharp, Richard S.; and Birchmeier, Hans P., to Burroughs Corporation. Multiprocessing system having means for permissive coupling of different subsystems. 3,768,074, Cl. 340-172.500.

Sharples, Thomas D., to Beckman Instruments, Inc. Resilient switch bearing. 3,767,881, Cl. 200-172.00a.

Shasta Beverages: *See—*
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Shavel, John, Jr.: *See—*
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Shaw, Joseph Michael: *See—*
Norris, Peter Edward; and Shaw, Joseph Michael, 3,766,637.

Shaw, Richard H., to United Aircraft Corporation. Replaceable tool for electrochemical drilling. 3,767,555, Cl. 204-224.00m.

Shawhan, Elbert N., to Sun Oil Company. Elevation angle indicator. 3,766,658, Cl. 33-366.000.

Shay, Joseph Leo: *See—*
Kasper, Horst Manfred; Shay, Joseph Leo; and Tell, Benjamin, 3,767,471.

Shea, Dennis W.; and Stoneman, William C., to Dana Corporation. Speed changing transmissions. 3,766,805, Cl. 74-768.000.

Sheckells, Amuel E., to International Steel Company. Revolving door operating and speed control mechanism. 3,766,686, Cl. 49-43.000.

Shelby, Richard K.: *See—*
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Shell Oil Company: *See—*
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Chiu, Ying-Chech, 3,766,983.
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Shellhause, Ronald L., to General Motors Corporation. Brake pedal assembly. 3,766,802, Cl. 74-512.000.

Shepard, Robert W., to Rohr Industries, Inc., mesne. Fold-down composition for machining articles. 3,767,441, Cl. 106-272.000.

Sheppard, Jon C.: *See—*
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Sherlock, Margaret H., to Schering Corporation. Clyceryl-N-(substituted phenyl) anthranilates in the treatment of inflammation. 3,767,811, Cl. 424-310.000.

Sherritt Gordon Mines Limited: *See—*
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Sherwin-Williams Company, The: *See—*
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Sherwood Medical Industries Inc.: *See—*
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Walker, Clarence L., 3,766,784.

Shibasaki, Katsutami, to Kurita Machinery Manufacturing Company, Limited. Apparatus for supporting filter medium for filter press. 3,767,052, Cl. 210-225.000.

Shibaya, Motoo; Santano, Kazunori; Higashide, Eiji; Yamana, Hideo; and Kishi, Toyokazu, to Takeda Chemical Industries, Ltd. Juvenimicin and production thereof. 3,767,793, Cl. 424-122.000.

Shields, Albert F., to S & S Corrugated Paper Machinery Co., Inc. Sheet feeder having suction assist. 3,767,186, Cl. 271-132.000.

Shields, Eugene H. Water bed. 3,766,579, Cl. 5-348.0wb.

Shigeta, Shizuo, to Toyo Radio Co., Ltd. Readout device for numeral display unit. 3,766,731, Cl. 58-125.000.

Shimahara, Hideo: *See—*
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Shimamura, Isao: *See—*
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Shimizu, Manzo; and Shimahara, Hideo, to Kabushiki Kaisha Shimizu Manzo Shoten. Method of selective separation of konjac flour from the tubers of amorphophallus konjac. 3,767,424, Cl. 426-372.000.

Shimizu, Masao, to Denki Onkyo Company, Limited. Method of polarizing piezoelectric elements. 3,766,615, Cl. 29-25.350.

Shimomura, Naonobu. Temperature measuring apparatus. 3,766,782, Cl. 73-359.000.

Shinetsu Chemical Company: *See—*
Koyanagi, Shunichi; Ogawa, Kinya; and Onda, Yoshiro, 3,767,603.

Shinoda, Daizaburo; and Kawamura, Nobuo, to Nippon Electric Company, Limited. Schottky barrier type field effect transistor. 3,767,984, Cl. 317-235.00r.

Shinoda, Takashi: *See—*
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Shirato, Takeshi; and Ogishi, Toshiyuki, to Mitsui Shipbuilding and Engineering Co., Ltd. Method of controlling multi-casing variable speed compressors. 3,767,318, Cl. 415-1.000.

Shoe, Theodore William, to Flexicore Co., Inc., The. Composite form. 3,767,154, Cl. 249-50.000.

Shohet, Juda L.; and Greene, David G. S., to United States of America, Atomic Energy Commission. Method and means for measuring the anisotropy of a plasma in a magnetic field. 3,767,929, Cl. 250-366.000.

Sibbach, Wilmer Charles: *See—*
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Sidis, Abraham; and Schneider, Haim, to Peret, A Company for Planning and Development of Ideals for Industry B.M. Collapsible reticular structures. 3,766,932, Cl. 135-4.00r.

Sidlinger, Bruce C. Trampoline support and cushioning means. 3,767,009, Cl. 182-139.000.

Siebelhoff, Bernd; and Senel, Josef, to Rheinmetall G.m.b.H. Blow moulding machine. 3,767,341, Cl. 425-150.000.

Sieber, Paul: *See—*
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Siegle, G., & Co., GmbH: *See—*
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Siegwart, Hans-Rudolf: *See—*
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Siepmann-Werke KG: *See—*
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Sigma Instruments Inc.: *See—*
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Signetics Corporation: *See—*
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Signorile, Marco, to Ercole Marelli & C. S.p.A. Electric hot water circulating pump with motor having an axial air gap. 3,767,330, Cl. 417-420.000.

Sillard, Gilles: *See—*
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Silverberg, Morton, to Xerox Corporation. Developing means for electrostatic printing apparatus. 3,766,850, Cl. 101-1.000.

Simmingskold, Bo Kurt Wilhelm; and Carbol, Vlastimil, to Glasforsknings-institutet. Process for making pelletized glass batches. 3,767,751, Cl. 264-117.000.

Simms, Douglas Leon: *See—*
Foley, Eugene Burdett, Jr.; MacRae, Alfred Urquhart; Simms, Douglas Leon; Polk, Norman Henry; and White, Clark Woody, 3,767,925.

Simon, Stefan; Wolff, Justus; and Johst, Wolfgang, to Hahn, Carl, Dr., KG. Process and apparatus for the shape-retaining closure of at least one extremity of a tubular package, especially tampons for feminine hygiene and product produced thereby. 3,766,703 Cl. 53-38.000.

Simons, Charles W.: *See—*
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Simpson, James E.: *See—*
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Simpson, Theodore Frederick, to RCA Corporation. Color image reproducing apparatus. 3,767,845, Cl. 178-5.40r.

Singel, Frank M.: *See—*
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Singer Company, The: *See—*
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Batson, William A., 3,767,948.
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Singer, Malcolm S., to Chevron Research Company. Herbicidal 1-aliphatic-3-aryl-5-imino imidazolidine-2,4-diones and imidazolidine-2-one-4-thiones. 3,767,376, Cl. 71-92.000.

Singh, Prem Prakash, to Du Pont de Nemours, E. I., and Company. Process for washing solvent laden filaments. 3,767,360, Cl. 8-137.500.

Singleton, Albert. Method of reinforcing a plastic bar. 3,767,504, Cl. 156-268.000.

Sirvet, Enn; Skrypek, John P.; and Whelan, Edward J., to Sun Chemical Corporation. Continuous can printer and handling apparatus. 3,766,851, Cl. 101-40.000.

Sivyer, Raymond Frank, to EMI Limited. Improvements in or relating to electron discharge devices. 3,767,283, Cl. 316-19.000.

Skanes, Frederick A.; Ayranto, Roy O.; and Kraemer, Ronald G., to International Harvester Company. Tractor body with integral upright A-frame. 3,767,254, Cl. 296-28.00r.

SKF Industrial Trading and Development Company N.V.: *See—*
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Slaney, John S., to Standard Pressed Steel Co. and Latrobe Steel Company. Cobalt-base alloys. 3,767,385, Cl. 75-122.000.

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Slemmons, John W. Poster mounts. 3,766,676, Cl. 40-158.00a.

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Smid, Henry A., Jr., to Smid, Henry, Plumbing & Heating Co., Inc. Prefabricated plumbing partition. 3,766,574, Cl. 4-191.000.

Smid, Henry, Plumbing & Heating Co., Inc.: *See—*
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Smith, Curtis P.; and Ulrich, Henri, to Upjohn Company, The. Aminomethyl phospholenes. 3,767,708, Cl. 260-563.00r.

Smith, Galen W. Motorcycle with auxiliary wheel. 3,767,000, Cl. 180-16.000.

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Smith, John H.; Conley, James W.; and Dworak, Stanley E., to General Electric Company. Cardiac pacemaker rate/interval computer system. 3,768,014, Cl. 324-158.00r.

Smith, Leary W.; and Bryant, Ellis H., Jr., to Audichron Company, The. Multiple announcement system with selective deletion of announcement. 3,767,864, Cl. 174-100.00r.

Smith, Melvin Wilmer; and Brun, Andre George, to Westinghouse Electric Corporation. Submarine tethered working unit and method of manipulating. 3,766,742, Cl. 61-69.00r.

Smith, Randlow: *See—*
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Smith, Rodney I. Underground electrical conduit. 3,767,232, Cl. 285-55.000.

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Smith, Stanley N., to Federal-Mogul Corporation. Method for making a shaft seal with an almost entirely molded lip. 3,767,739, Cl. 264-161.000.

Smiths Industries, Limited: *See—*
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Snover, John A.; and Donovan, Richard D., to Metal Hydrides, Incorporated. Method for preparing beryllium compounds. 3,767,715, Cl. 260-665.00r.

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Sobel, Martin, to Celanese Corporation. Mandrel. 3,767,129, Cl. 242-18.00r.
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Sodeco Societe des Compueurs de Geneve S.A.: *See—*
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Soderlund, Clarence H.; and Hathaway, David F., to Kellogg Company. Apparatus for producing overland extrudates. 3,767,338, Cl. 425-131.000.
Sogever Limitee: *See—*
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Solartron Electronic Group Limited, The: *See—*
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Somers, Thomas Noel Enda: *See—*
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Sommer, Alfred. Method of manufacturing a magnetic recorder head. 3,767,497, Cl. 156-89.000.
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Sonoda, Takeshi; and Sugai, Katsuo, to Toray Industries, Inc. Process for isomerizing aromatic hydrocarbons. 3,767,721, Cl. 260-668.00a.
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Sophinos, Nicholas, to Colt Industries Operating Corporation. Blank firing adaptor for gas operated firearm. 3,766,822, Cl. 89-14.00e.
Soreau, Robert Frederick Michael; and Dupre, Victor Marie, to Ugine Kuhlmann. Process for dyeing polyacrylonitrile fibers with methine dyes. 3,767,361, Cl. 8-177.0ab.
Soukup, Robert J.: *See—*
Parliment, Thomas H.; Epstein, Martin F.; Clinton, William P.; Scarpellino, Richard; and Soukup, Robert J., 3,767,425.
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Yeakley, Lester M., 3,766,831.
Southwire Company: *See—*
Cofer, Daniel B.; Mitchell, Francis Marion; Ward, George C.; and Kozak, Milan, 3,766,763.
Ward, George C.; and Lenaeus, George E., 3,766,967.
Spachner, Sheldon A.; and Desai, Prakash D., to Gulf & Western Industrial Products Company. Press and drive mechanism therefor. 3,766,771, Cl. 72-450.000.
Speckler, Steven Alan, to RCA Corporation. Direct-coupled triggered flip-flop. 3,767,943, Cl. 307-292.000.
Speier, John L., to Dow Corning Corporation. Organoxilicon cinnamates. 3,767,690, Cl. 260-448.20n.
Spence, Jack E., to Durfold, Inc. Convertible furniture construction. 3,767,258, Cl. 297-111.000.
Spencer, Lloyd. Self-flushing irrigating valve. 3,767,124, Cl. 239-542.000.
Sperry Rand Corporation: *See—*
Bizzigotti, Pio J.; and Charlton, John, 3,768,098.
Lins, Stanley J.; and Hanson, David G., 3,768,095.
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Eck, Herbert; Hannebaum, Manfred; Heckmaier, Joseph; and Spes, Hellmuth, 3,767,705.
Spietschka, Ernst; Ische, Fredrich; and Kruse, Hubert, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Mixture of quinophthalone disperse dyestuffs. 3,767,357, Cl. 8-25.000.
Squibb, E. R., & Sons: *See—*
Bodanszky, Miklos; Ondetti, Miguel A.; Vonsaltza, Malcolm H.; Narayanan, Venkatachala L.; and Levine, Seymour D., 3,767,639.
Squibb, E. R., & Sons, Inc.: *See—*
Haugwitz, Rudiger D.; and Narayanan, Venkatachala L., 3,767,654.
Krapcho, John, 3,767,653.
Treuner, Uwe; and Breuer, Hermann, 3,767,645.
Squibb, E. R., Sons, Inc.: *See—*
Narayanan, Venkatachala L.; and Haugwitz, Rudiger D., 3,767,694.
SSP Truck Equipment, Inc., mesne: *See—*
Garnett, Edward V., 3,767,007.
Staats, James E., to General Electric Company. Control and power supply systems for magnetron devices. 3,767,883, Cl. 219-10.550.
Stackpole Components Company: *See—*
Sykora, Allan J., 3,767,878.
Stahlecker, Hans; and Karolyi, Oskar, to Horauf, Michael, Maschinenfabrik, Firma. Apparatus for the manufacture of work pieces constructed as cup-like, upwardly or downwardly tapering containers. 3,767,507, Cl. 156-382.000.
Stamicarbon N.V.: *See—*
Cresmers, Henricus M. J. C., 3,767,717.
Geus, John W.; Nobel, Adriaan P. P.; Scholten, Joseph J. F.; and Scheijen, Wilhelmus G., 3,767,772.
Mars, Pieter; Duyverman, Coenraad J.; and Gorgels, Martin J., 3,767,758.
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Standard Oil Company: *See—*
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Dallen, John A., 3,766,698.
Jackson, Norman C., 3,766,697.
Standardgraph Filler & Fiebig GmbH: *See—*
Koelichen, Harald, 3,767,035.
Stanley Drug Products, Inc.: *See—*
Cook, Elton S.; and Nutini, Leo G., 3,767,792.
Stanley, William L.: *See—*
Olson, Alfred C.; and Stanley, William L., 3,767,531.
Stanley Works Pty. Ltd., The: *See—*
Plaw, Graeme Raymond, 3,767,244.
Stapleford, Gary N.; and Tellier, Robert E., to Sanders Associates, Inc. Magnetic drum storage apparatus. 3,768,082, Cl. 340-174.10c.
Stark, Forest G.; and Textoris, Melvin A., to General Fireproofing Company, The. Portable wall assembly. 3,766,692, Cl. 52-71.000.
Stark, John, Jr.; and Gries, Robert Joseph, to RCA Corporation. Delay of video amplifier D.C. bias change to accommodate rise/fall of kinescope high voltage after turn on/off of receiver. 3,767,854, Cl. 178-5.40r.
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Starliter, Aaron G.: *See—*
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Staub, Alfred: *See—*
Kolliker, Hans-Peter; Staub, Alfred; and Hindermann, Peter, 3,767,680.
Kolliker, Hans-Peter; Staub, Alfred; and Hindermann, Peter, 3,767,681.
Staub, Charles H., Jr., to Mine Safety Appliance Company. Cooled oxygen producing unit. 3,767,366, Cl. 23-281.000.
Staudte, Juergen H., to Statek Corporation. Microresonator packaging and tuning. 3,766,616, Cl. 29-25.350.
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Stefanucci, Arthur: *See—*
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Stehlin, Robert A., to Texas Instruments, Incorporated. Triggered bistable multivibrator circuits utilizing complementary transistor pairs. 3,767,944, Cl. 307-288.000.
Steiman, Wolf; and Beres, Steven W., to VCA Corporation. Aerosol valve construction for dispensing two fluids. 3,767,086, Cl. 222-136.000.
Steiner, Walter. Can opener with magnetic cutting chip catcher. 3,766,647, Cl. 30-9.000.
Steinmaier, Walter, to U.S. Philips Corporation. Method of producing IGFET devices having outdiffused regions and the product thereof. 3,767,487, Cl. 148-191.000.
Stelts, Philip D.: *See—*
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Stephens, James M. Stabilizer for vehicle. 3,767,226, Cl. 280-150.500.
Sternad, William A. Railroad car switching game. 3,767,202, Cl. 273-132.000.
Sternco Industries, Inc.: *See—*
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Stevens, Thad: *See—*
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Kamlukin, Igor; Stevenson, William L.; Vertanen, George J.; and Freier, Edward Jr., 3,766,722.
Stewart, Joseph B. Convertible sofa-bed without integral support structure. 3,766,577, Cl. 5-12.000.
Stewart-Warner Corporation: *See—*
Bardwell, Francis G., 3,767,923.
Powell, Patrick L., 3,766,948.
Williams, Ronald D., 3,768,090.
Stiles, Charles Wesley, Jr., to Motorola, Inc. Microwave integrated circuit. 3,768,050, Cl. 333-97.00s.

Stites, Francis H., to Servo Corporation, mesne. Pulse width discriminator using difference amplifiers and threshold setting means. 3,768,023, Cl. 328-111.000.
Stock, Hans-Joachim: *See—*
Schnattinger, Walter Ludvig; Seelos, Albert; Mayer, Heinz; Oelmayer, Reinhold; Duell, Josef; Hertl, Wilhelm; Koch, Hans-Jorg; and Stock, Hans-Joachim, 3,767,844.
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Stone, David T., to Allis-Chalmers Corporation. Electrical bushing having means for lowering the power factor. 3,767,843, Cl. 174-142.000.
Stoneman, William C.: *See—*
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Storey, James S., 1/2 to Berger, Phill. Securing device for two-wheeled vehicles. 3,766,757, Cl. 70-18.000.
Storm Products Company: *See—*
Swaisgood, Ralph H., 3,766,883.
Storreh, Rolf, to Von Roll AG. Electric current collector shoe. 3,767,868, Cl. 191-49.000.
Stracke, Fred H.; and Mascenik, John, to Esso Research and Engineering Company. Cargo transfer system for a floating storage vessel and offtaker moored in tandem. 3,766,938, Cl. 137-355.160.
Stratton, Jerry L.: *See—*
Kossler, George W.; and Stratton, Jerry L., 3,768,013.
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Mohrhauser, John P.; and Strazza, Richard W., 3,766,760.
Strik, Petrus Johannes Antonius: *See—*
Haans, Petrus Franciscus A.; and Strik, Petrus Johannes Antonius, 3,768,034.
Strobel, Albert, to I-T-E Imperial Corporation. Internal handle for multi-mechanism circuit breaker interlocking multiple switch assemblies for simultaneous actuation. 3,767,871, Cl. 200-500.00c.
Stroop, John Harry, to Robins, A. H., Company, Incorporated. Uterine simulator trainer. 3,766,666, Cl. 35-17.000.
Stryker, Harvey I., to Du Pont de Nemours, E. I., and Company. Rhodamine dye composition. 3,767,358, Cl. 8-25.000.
Stucky, James L. Air conveyor for fowl. 3,767,268, Cl. 302-40.000.
Studinka, Josef: *See—*
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Suami, Tetsuo: *See—*
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Suami, Tetsuo; and Machinami, Tomoya, to Suami, Tetsuo. Streptozotocin derivatives and process for preparing the same. 3,767,640, Cl. 260-210.00r.
Suchowski, Bernard, to Sternco Industries, Inc. Miter frame corner construction. 3,767,237, Cl. 403-171.000.
Sugai, Katsuo: *See—*
Sonoda, Takeshi; and Sugai, Katsuo, 3,767,721.
Sugimoto, Masatsune: *See—*
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Sugisaki, Zenjiro; Watanabe, Norihiko; Koyama, Hirokazu; Kobayashi, Tuneo; and Iguchi, Nobuyoshi, to Noda Institute for Scientific Research. Process for producing uricase. 3,767,533, Cl. 195-66.00r.
Sugita, Masonori: *See—*
Nagasaki, Tomohisa; Sugita, Masonori; Nakagawa, Kunio; and Koyama, Hiroyaso, 3,767,528.
Sugiyama, Shigeo: *See—*
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Suh, John T., to Colgate-Palmolive Company. Derivatives of 3,4-dihydrobenzothieno[2,3-c] pyridine. 3,767,659, Cl. 260-294.80b.
Sukatsch, Dieter: *See—*
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Sulcs, Juris: *See—*
Collins, Byron R.; Sulcs, Juris; and McVey, Charles I., 3,767,965.
Sullivan, Cornelius J., to Airco, Inc. Air wire electrode for stainless steel welding. 3,767,888, Cl. 219-146.000.
Sullivan, Robert D.; and Jutte, Gottfried W., to Richardson Company, The. Lock mold assembly for a container mold. 3,767,156, Cl. 249-107.000.
Suluki, Mamoru; Hayashi, Mikio; Hieda, Kazuo; Murata, Yoshiro; Ohsu, Motomasa; Yoshigoe, Kazumi; and Kotera, Norio, to Sumitomo Chemical Company, Limited. Process of preparing polyesters from hydroxybenzoic acids and derivatives, and polyester product prepred therefrom. 3,767,621, Cl. 260-47.00c.
Sumikin Coke Company Limited: *See—*
Ikeda, Minoru; and Sugimoto, Masatsune, 3,767,536.
Sumitomo Chemical Company, Limited: *See—*
Atsumi, Toshio; Kobayashi, Kenji; Takebayashi, Yoshiaki; and Yamamoto, Hisao, 3,767,658.
Kishikawa, Hiroshi; Yasuno, Kiyoshi; and Kitamura, Shuji, 3,767,606.
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Sumitomo Electric Industries, Ltd.: *See—*
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Sun Chemical Corporation: *See—*
Sirvet, Enn; Skrypek, John P.; and Whelan, Edward J., 3,766,851.
Sun Oil Company: *See—*
Shawhan, Elbert N., 3,766,658.
Sun Oil Company of Pennsylvania: *See—*
Lerner, Julius; and Mayer, Robert, 3,766,623.
Sun, Yun Chung; and Winterbottom, James M., to Dow Chemical Company, The. Oxidation of ethylbenzenes. 3,767,704, Cl. 260-524.00r.
Sundberg, Yngve; and Svensson, Erik, to Allmanna Svenska Elektriska Aktiebolag. Electromagnetic valve for regulating the flow-rate of melt from a container. 3,767,090, Cl. 222-383.000.
Surash, John J.: *See—*
Donovan, Thomas S.; and Surash, John J., 3,767,689.
Sussingham, George: *See—*
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Suzuki, Hideo; Yoshida, Harumi; Ozawa, Yoshiko; Kamibayashi, Akira; Sato, Munetaka; Mori, Atsushi; and Endo, Makoto, to Industrial Science & Technology, Agency of and Hokkaido Sugar Co., Ltd. Method for increasing yield of sucrose. 3,767,526, Cl. 195-11.00.
Suzuki, Katsuo, to Fuji Xerox Co., Ltd. Drum cleaning device for an electrophotographic duplicator. 3,766,592, Cl. 15-256.510.
Suzuki, Rusuke. Method of producing a thin plastic dial plate and in particular a plastic date wheel. 3,767,753, Cl. 264-138.000.
Svanstrom, Ellis Kjell Ake, to Rederiaktiebolaget Nordstjernan. Method for producing tungsten in oxidic form from tungsten ore. 3,767,761, Cl. 423-53.000.
Svensson, Erik: *See—*
Sundberg, Yngve; and Svensson, Erik, 3,767,090.
Swain, William H. Means for measuring magnitude and direction of a direct current or permanent magnet, including clip-on direct current sensing inductor. 3,768,011, Cl. 324-117.00r.
Swaisgood, Ralph H., to Storm Products Company. Machine for circumferential color coding wire. 3,766,883, Cl. 118-44.000.
Swaney, Larry R.: *See—*
Coran, Aubert Y.; and Swaney, Larry R., 3,767,505.
Swartz, Richard L.: *See—*
Dillard, John W.; Tringali, Dominick; Swartz, Richard L.; and Hinson, Ernest M., Jr., 3,767,113.
Sweeny, Keith H.; and Fischer, James R., to United States of America, Interior. Self-destructing pesticidal formulations and methods for their use. 3,767,782, Cl. 424-2.000.
Sweeny, Keith H.; Fischer, James R.; and Lung, Charles A., to United States of America, Interior. Self-destructing pesticidal formulations and methods for their use. 3,767,783, Cl. 424-2.000.
Sweger, Russell P. Anticipating thermostatic transmitter. 3,767,936, Cl. 307-117.000.
Swick, George E., Jr.; and Danielson, Ellsworth H., to Cornelius Company, The, mesne. Display apparatus. 3,766,863, Cl. 108-111.000.
Sygnator, Henry A., to Illinois Tool Works Inc. Method of installing panel insert device. 3,766,636, Cl. 29-526.000.
Sykora, Allan J., to Stackpole Components Company. Keyboard switch. 3,767,878, Cl. 200-159.00r.
Sylvania Electric Products, Inc.: *See—*
George, Frederick J.; and Kern, Edmund R., 3,767,959.
Sze, Morgan Chuan-Yuan; and Reilly, James William, to Lummus Company, The. Production of jet fuel. 3,767,562, Cl. 208-57.000.
Szelke, Michael: *See—*
Danilewicz, John Christopher; and Szelke, Michael, 3,767,815.
Tabata, Junichi. Apparatus for mounting low temperature liquid storage tanks. 3,767,150, Cl. 248-146.000.
Tabler, Donald C.: *See—*
Johnson, Marvin M.; Tabler, Donald C.; and Nowack, Gerhard P., 3,767,718.
Tadokoro, Shiunichi. Hem forming construction of garments, particularly trousers and skirts. 3,766,566, Cl. 2-275.000.
Takagi, Sadaaki; and Yoshida, Masamichi, to Fujitsu, Limited. Method of manufacturing semiconductor devices. 3,767,484, Cl. 148-188.000.
Takahashi, Masao: *See—*
Tsubouchi, Norio; and Takahashi, Masao, 3,767,579.
Takahi, Yukiyoshi: *See—*
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Takano, Hiroshi; Nakajima, Hitoshi; Harada, Kenzo; and Miura, Yukio, to Asahi Kasei Kogyo Kabushiki Kaisha. Photosensitive com-

position containing an aldol naphthylamine as color former and a halogenated hydrocarbon as photoactivator. 3,767,399, Cl. 96-48.0r.

Takasago Thermal Engineering Co., Ltd.: *See*—
Aoh, Toshiaki; and Yanagimachi, Kiyoshi, 3,766,750.

Takebayashi, Michinori: *See*—
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Takebayashi, Yoshiaki: *See*—
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Takeda Chemical Industries, Ltd.: *See*—
Shibaya, Motoo; Santano, Kazunori; Higashide, Eiji; Yamana, Hideo; and Kishi, Toyokazu, 3,767,793.

Takeshima, Takahiko: *See*—
Jimi, Yuji; and Takeshima, Takahiko, 3,767,012.

Takeya, Kenji; and Tanahashi, Kunio, to American Cyanamid Company. Process for producing brilliant acrylic fibers of a non-circular cross-section. 3,767,755, Cl. 214-177.00f.

Takimoto, Yukio: *See*—
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Tally, Sidney K.; and Dahlgren, Victor F., to FMC Corporation. Method of laminating long strips of various materials. 3,767,500, Cl. 156-184.000.

Talos Systems Inc.: *See*—
Rodgers, James L., 3,767,858.

Tamura, Nobuhiro: *See*—
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Tanahashi, Kunio: *See*—
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Tanaka, Hideaki; and Tauda, Minoru, to Industrial Science & Technology, Agency of. Photosensitive composition comprising light-sensitive polymer. 3,767,415, Cl. 96-115.00r.

Tani, Hisashi: *See*—
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Taranko, Lubomyr B.: *See*—
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Tarshis, Lemuel A., to General Electric Company. Multicomponent eutectics for high temperature applications. 3,767,479, Cl. 148-32.000.

Tatara, Seiji; Morita, Yasuo; Doomori, Yoshiki; Kumoda, Masasi; Iwaki, Yoshikazu; and Fujishima, Teruyuki, to Nippon Soda Co., Ltd. Process for producing calcium hypochlorite. 3,767,775, Cl. 423-474.000.

Tates, Donald W.: *See*—
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Tax, Hans: *See*—
Tax, Hans; Franke, Rudiger; and Hosler, Klaus (said Franke and said Hosler assors. to said), 3,767,061.

Tax, Hans; Franke, Rudiger; and Hosler, Klaus, said Franke and said Hosler assors. to said Tax, Hans. Tower crane with load limiting apparatus. 3,767,061, Cl. 212-144.000.

Taylor, Robert C.: *See*—
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Teagle, William Thomas. Chain-type conveyors. 3,767,034, Cl. 198-196.000.

Teegen, Donald R. Method and means for shoring the side walls of trenches to prevent their caving in. 3,766,740, Cl. 61-41.00a.

Tefertiller, Ben A.: *See*—
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Teiling, Carl Torbern, to AGA Aktiebolag. Apparatus for improving the quality of the independent line of sight when sighting with direct-sighted weapons. 3,766,827, Cl. 89-41.00m.

Teldec-Telefunken Decca Schallplattera G.m.b.H.: *See*—
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Teldix GmbH: *See*—
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Teledyne Industries, Inc.: *See*—
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Telefex Incorporated: *See*—
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Tell, Benjamin: *See*—
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Tellier, Robert E.: *See*—
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Csepanyi, Sandor; Enekes, Sandor; Temesszentandrasi, Guido; Zambo, Pal; and Palmay, Zoltan, 3,767,380.

Tenneco Chemicals, Inc.: *See*—
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Terminal Data Corporation: *See*—
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Teszner, Stanislas; Lecrosnier, Daniel P.; and Pelous, Gerard P. Ion implantation field-effect semiconductor devices. 3,767,982, Cl. 317-235.00r.

Texaco Development Corporation: *See*—
Marion, Charles P., 3,767,379.

Texaco Inc.: *See*—
Colvert, James H.; Janes, Edward; Kaufman, Harold C.; and Smith, Randlow, 3,767,719.
Jones, John M., 3,767,921.
Nebzydoski, John W.; Patmore, Edwin L.; and Oberender, Frederick G., 3,767,573.
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Texas Instruments, Incorporated: *See*—
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Ornstein, Jacob B., 3,767,370.
Schneikart, Paul E.; Murdock, Roy C.; and Day, Job H., 3,767,875.
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Textron, Inc.: *See*—
Rastelli, Telesfore, 3,766,767.

Thackray, Chas. F., Limited: *See*—
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Theimer, Ernst T.: *See*—
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Theimer, Ernst T., to International Flavors & Fragrances, Inc. Saturated indane derivatives and processes for producing same. 3,767,713, Cl. 260-617.00f.

Theis, James V., Jr.; and Davis, Lynn M., to Hollymatic Corporation. Variable speed governor. 3,767,320, Cl. 415-30.000.

Thentham Corporation: *See*—
Frye, Elroy E.; and Trentham, Harold L., 3,767,777.

Thermo Weave, Inc.: *See*—
Miller, Paul L., 3,767,495.

Thiel, Alfons W. Method for producing thermoplastic articles having thin double walls. 3,767,501, Cl. 156-199.000.

Thiele, Geraldine H. Non-surgical removal of abnormal bone proliferation. 3,767,812, Cl. 424-315.000.

Thiokol Chemical Corporation: *See*—
Grosgebauer, Roger A., 3,767,142.
Villa, Jose L., 3,767,672.

Thomas, Ian M., to Owens-Illinois, Inc. Production of P_2O_5-SiO_2. 3,767,432, Cl. 106-52.000.

Thomas, Ian M., to Owens-Illinois, Inc. Method of preparing P_2O_5-SiO_2 products. 3,767,434, Cl. 106-52.000.

Thompson, Alexander David. Sewage treatment vessel. 3,767,051, Cl. 210-197.000.

Thompson, William Henry: *See*—
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Thomson-CSF: *See*—
Henry, Raymond; Silliard, Gilles; and Blanchard, Pierre, 3,768,044.

Thorborg, Kjeld, to Allmanna Svenska Elektriska Aktiebolaget. Inverter for transmitting power between a direct voltage source and an alternating voltage network. 3,768,001, Cl. 321-27.00r.

Thorsbakken, Arden L. Wedge locking device. 3,766,610, Cl. 24-115.00r.

Thorsby, Harry Pichonsky. Pyroly maker. 3,767,343, Cl. 425-218.000.

Threlfall, Terence Leslie: *See*—
Clark, David William Harold; and Threlfall, Terence Leslie, 3,767,443.

Throckmorton, Peter E.; McKillip, William J.; and Richards, Harvey J., to Ashland Oil, Inc. Stabilization of halogen containing polymers. 3,767,615, Cl. 260-45.75r.

Thurston, Kelly W.: *See*—
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Tibbals, Edward Camp, Jr.; and Keller, Jack. Fluidic cycled sprinkler head. 3,767,119, Cl. 239-251.000.

Tiers, George Van Dyke: *See*—
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Timex Corporation: *See*—
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Tiraspolsky, Wladimir; Flamand, Michel; and Reynard, Remi, to Institut Francais du Petrole. Device for automatic regulation of the running speed of a drilling turbine through elastic accumulator means. 3,766,992, Cl. 175-25.000.

Tjoa, Giok H.; and Kilgren, Karl H., to Chevron Research Company. Method of removing gaseous sulfides from gaseous mixtures. 3,767,766, Cl. 423-220.000.

Toagosei Chemical Industry Co., Ltd.: *See*—
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Tobe, Sadanobu: *See*—
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Tokyo Shibaura Electric Co., Ltd.: *See—*
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Tomita, Mamoru: *See—*
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Tortoso, John. Gas bulb for a gas-filled dial thermometer. 3,766,783, Cl. 73-368.200.

Totoonchie, Edward Peter, to Versa Wall Inc. Demountable wall partition system. 3,766,696, Cl. 52-241.000.

Touba, Ali R., to General Mills, Inc. Method of roasting coffee. 3,767,417, Cl. 426-523.000.

Toupal, John E. Coil spring assemblies for furniture. 3,766,578, Cl. 5-267.000.

Towlson, Peter G. Electric arcs. 3,767,922, Cl. 250-340.000.

Townsend, George R.; Price, Edmund J.; and Harper, George C., to Pittsburgh-Des Moines Steel Company. Modular, prefabricated, integrated communications relay tower. 3,768,016, Cl. 325-1.000.

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Trass, Alan Neville. Ignition distributor. 3,767,935, Cl. 307-106.000.

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Tsubouchi, Norio; and Takahashi, Masao, to Nippon Electric Company, Limited. Piezoelectric ceramics. 3,767,579, Cl. 252-62.900.

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Tsuruoka, Takashi; Fukatsu, Shunzo; Nomiya, Bunzo; Inoue, Shigeharu; and Niida, Taro, to Meiji Seika Kaisha, Ltd. Process for preparing allylic rearrangement compounds of antibiotics SF-837 and SF-837 A2. 3,767,641, Cl. 260-210.0ab.

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Turner, James Thomas. Dyeing cotton-polyester textiles with one-bath mixture of disperse and cellulose-reactive dyestuff. 3,767,356, Cl. 8-21.00c.

Turner, William Neil; and Johnson, Frank Charles, to Secretary of State for Defence, The. Method of manufacturing carbon articles. 3,767,773, Cl. 423-447.000.

Tushaus, Leonard A., to Minnesota Mining and Manufacturing Company. Pressure-sensitive polyurethane adhesives. 3,767,040, Cl. 206-59.00c.

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Ueno Fine Chemical Industries, Ltd.: *See—*
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Ueno, Yoshito; Kajitani, Mitsuo; Takimoto, Yukio; and Shinoda, Takashi, to Nippon Electric Company, Limited. Pulse position modulation communication system. 3,767,855, Cl. 178-68.000.

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Wachtel, Jean Louis, to Celluloid S.A. Brush with set-in brushing fixture. 3,766,590, Cl. 15-186.000.
Wacker-Chemie G.m.b.H.: *See—*
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Wada, Kinzo, to Victor Company of Japan, Limited. Drive circuit for brushless motor. 3,767,986, Cl. 318-138.000.
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Waddell, Richard G., to Innovation Resources Corporation, The. Pivotal barrel and receiver assembly having a removably mounted breech block. 3,766,677, Cl. 42-75.00d.
Wagenseil, Ludwig, to Hydromatik GmbH, mesne. Power control device for two or more hydraulic pumps. 3,767,327, Cl. 417-216.000.
Wagner, Earl William, to AMP Incorporated. Apparatus for applying terminals mounted on a tape to wires. 3,766,625, Cl. 29-203.0ts.
Wagner, Frank Albert, Jr.: *See—*
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Walker, David G.; and Keyworth, Donald A., to Tenneco Chemicals, Inc. Method of transporting acetylene. 3,767,725, Cl. 260-679.00a.
Wanslik, Wilhelm; Ratheiser, Heinz; and Burger, Friedrich, to Krauss-Maffei Aktiengesellschaft. Power distributing transmission systems. 3,766,797, Cl. 74-410.000.
Ward, George C.: *See—*
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Ward, George C.; and Lenaeus, George E., to Southwire Company. Apparatus for preliminary cooling of continuous casting machine. 3,766,967, Cl. 164-283.0ms.
Ward, Peter Thomas, to Rubery, Owen & Co. Limited. Load handling means. 3,767,250, Cl. 294-81.0sf.
Ward, Richard W., to K-D Lamp Company. Traffic warning device. 3,766,881, Cl. 116-63.00p.
Warner-Lambert Company: *See—*
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Weber, Helmut: *See—*
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Weir, Norman, to Boeing Company, The. Non-jamming ball screw linear actuator. 3,766,790, Cl. 74-89.150.
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Williams, Charles J., to Universal Oil Products Company. Laminate of cotton paper core with resin phosphorescent material scribed to expose core. 3,767,517, Cl. 161-2.000.
Williams, Merl A., to Central Soya Company, Inc. Method for determining the durability of pellets and apparatus therefor. 3,766,776, Cl. 73-78.000.
Williams, Norman H., to Varian Associates. Adjustable X-ray beam collimator with shutter for illumination of the radiation pattern. 3,767,931, Cl. 250-511.000.
Williams, Richard M. Encode selector system. 3,768,078, Cl. 340-172.500.
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Wirth, Joseph G., to General Electric Company. 2,2'-Bis(3-pyridinols). 3,767,652, Cl. 260-240.00d.

Witt, Karl J. Portable seat. 3,767,011, Cl. 182-187.000.

Witteman, Wilehlmus Jacobus; and Van Dan, Hendrik Bessel Bart, to U.S. Philips Corporation. Device for producing stimulated infrared emission, an laser, having a wavelength of approximately 10.6u by means of an electric discharge in a gas mixture consistin partly of carbonic acid gas, and electric discharge tube destined for such a device. 3,768,036, Cl. 331-94.500.

Wittern, Francis A. Article storing and dispensing device. 3,767,081, Cl. 221-90.000.

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Woodcock, Sidney J., to General Electric Company. Steam reheater control for turbine power plant. 3,766,732, Cl. 60-64.000.

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Wright, Nelpher. Shower curtain support. 3,766,572, Cl. 4-149.000.

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Yamaguchi, Kazuo; Hasuo, Masayoshi; and Ito, Isao, to Mitsubishi Chemical Industries, Ltd. Process for polymerization of olefin. 3,767,635, Cl. 260-88.20r.

Yamaguchi, Tetsuo; Kido, Hiroshi; Nakagawa, Takao; and Omori, Toshio. High tensile strength steel having excellent press shapability. 3,767,387, Cl. 75-124.000.

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Yeh, Tsu-Hsing: *See—*
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Yoshimura, Noboru, to Aisin Seiki Kabushiki Kaisha. Door latch mechanism. 3,767,243, Cl. 292-216.000.

Yoshinaga, Fumihiro; Kobota, Koji; Fujita, Itsuo; and Okumura, Shinji, to Ajinomoto Co., Inc. Method of producing L-isoleucine by fermentation. 3,767,529, Cl. 195-30.000.

Yoshioka, Akio: *See—*
Ueda, Yoshitaka; Yoshioka, Akio; and Fujiwara, Hidehiko, 3,767,386.

Young, James W.: *See—*
Hall, Richard W.; and Young, James W., 3,767,065.

Young, James W.; and Arrington, Thomas L., to Dresser Industries, Inc. Earth boring machine with multi-motor drive. 3,766,995, Cl. 175-53.000.

Young, William R.: *See—*
Aviram, Arieh; Cox, Robert J.; and Young, William R., 3,767,289.

Youngblood, Douglas J.; Cooper, Thomas A.; and Colvert, James H., to Texaco Inc. Production of low pour fuel oils. 3,767,564, Cl. 208-92.000.

Zachariasen, Hans: *See—*
Hougen, Leif Reidar; and Zachariasen, Hans, 3,767,760.

Zambo, Pal: *See—*
Cespanyi, Sandor; Enekes, Sandor; Temesszentandrasi, Guido; Zambo, Pal; and Palmay, Zoltan, 3,767,380.
Zar, Jacob L., to Avco Corporation. Modular aerodynamic laser window. 3,768,035, Cl. 331-94.500.
Zaunere, Roger L.: *See—*
Ericson, David B.; Wollin, Goesta; and Zaunere, Roger L., 3,767,324.
Zausner Foods Corporation: *See—*
Zausner, Sol, 3,766,709.
Zausner, Sol, to Zausner Foods Corporation. Sterilizing device for container filling machines. 3,766,709, Cl. 53-167.000.
Zawadzki, George Z., to Von Duprin, Inc. Push plate panic exit device. 3,767,238, Cl. 292-21.000.
Zech, Hans, to Messerschmitt-Bolkow-Blohm GmbH. Control means primarily for rotary-wing aircraft. 3,767,323, Cl. 416-98.000.
Zeisberger, Robert, to Siegle, G., & Co., GmbH. Pigment composition for coloring polypropylene. 3,767,444, Cl. 106-308.00r.
Zeitlin, Edward J.: *See—*
Zeitlin, Edward J.; and Leighton, Lee, 3,767,893.
Zeitlin, Edward J.; and Leighton, Lee, to Zeitlin, Edward J. Method of balancing current volume based on temperature setting for an electrode-type liquid heater for a boiler. 3,767,893, Cl. 219-287.000.
Zellner, Carl N., to Celanese Corporation. Process for producing polyamidoximes and poly (bisbenzimidazobenzophenanthroline) (BBB) type polymers derived therefrom. 3,767,616, Cl. 260-47.00r.
Zemels, Carl G., to Kearny National Inc. Electric connector and method of forming a connection. 3,768,065, Cl. 339-59.00r.
Zenith Radio Corporation: *See—*
Kaplan, Sam H., 3,767,396.
Podowski, Robert R., 3,768,019.
Rowe, William A.; and Schwartz, James W., 3,767,395.
Sobel, Alan, 3,768,060.
Zephyr Manufacturing Co., Inc.: *See—*
Bohoroquez, Luis A.; and Vindez, Pierre G., 3,767,313.
Ziegler, Bernard A. J., to International Standard Electric Corporation. Signal data processor for a pulse coherent range-gated doppler radar system. 3,768,097, Cl. 343-9.000.
Zielinski, James, to Esso Research and Engineering Company. 3-Mercapto-1,2,4-triazol-2-ine-5(thi)one containing thiophosphates. 3,767,666, Cl. 260-308.00c.
Zielinski, Richard J.: *See—*
Oszlanyi, Antal G.; Zielinski, Richard J.; and Kozak, Thomas J., 3,767,822.
Zielinski, Walter J.: *See—*
Keyser, William L.; and Zielinski, Walter J., 3,767,824.
Ziemek, Gerhard K., to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Method of making electrical cables. 3,766,645, Cl. 29-624.000.

LIST OF DESIGN PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF OCTOBER, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Aarnio, Eero, to Asko Osakeyhtio. Chair. 228,707, 10–23–73, Cl. D6—67.

Adachi, Masatoshi: *See*—
Wakai, Noboru, Ono, and Adachi. 228,813.

Adeney, Robert E. J., to Swaine, Adeney, Brigg & Sons Ltd. Saddle foundation for use in the construction of a saddle. 228,770, 10–23–73, Cl. D30—20.

Ag-Tronic, Inc.: *See*—
Watley, Lindell D. 228,714.

Albrizzi, Alexander R. D., to Albrizzi Ltd. Bracket component for use in constructing a structure such as framing for furniture or shelving. 228,738, 10–23–73, Cl. D8—235.

Albrizzi Ltd: *See*—
Albrizzi, Alexander R. D. 228,738.

Amar, Henry E., H. G. Diebler, J. Isreell, G. Payne, and W. J. Smythe, to Technicon Instruments Corp. Combined sampler and automated chemistry apparatus. 228,755, 10–23–73, Cl. D16—2.

American Can Co.: *See*—
Kuchenbecker, Morris W. 228,746.

American Desk Manufacturing Co.: *See*—
Kramer, Gideon A. 228,716.
Kramer, Gideon A. 228,717.
Kramer, Gideon A. 228,718.

AMF Inc.: *See*—
Mango, Joseph. 228,754.

Amy, Jonathan W., J. H. Beynon, and D. O. Jones, to Analog and Digital Controls Corp. Skill game cabinet. 228,773, 10–23–73, Cl. D34—5.

Amy, Jonathan W., J. H. Beynon, and D. O. Jones, to Analog and Digital Controls Corp. Skill game cabinet. 228,774, 10–23–73, Cl. D34—5.

Analog and Digital Controls Corp.: *See*—
Amy, Jonathan W., Beynon, and Jones. 228,773.
Amy, Jonathan W., Beynon, and Jones. 228,774.

Anderson, Douglas W., deceased, E. A. Anderson, administratrix, to Burgess Vibrocrafters, Inc. Grass clipper. 228,729, 10–23–73, Cl. D8—8.

Anderson, Elizabeth A.: *See*—
Anderson, Douglas W. 228,729.

Anderson, Reese L. Holder for dental floss. 228,767, 10–23–73, Cl. D24—1.

Andre, Joseph G. Game board. 228,771, 10–23–73, Cl. D34—5.

Aronson, Robert R, to Electric Energy Systems, Inc. Charging station for electrically propelled vehicles. 228,790, 10–23–73, Cl. D26—13.

Asko Osakeyhtio: *See*—
Aarnio, Eero. 228,707.

Auto Mag Corp.: *See*—
Sanford, Harry W. 228,757.

Automatic Radio Mfg. Co., Inc.: *See*—
Lyall, George E. 228,786.
Lyall, George E. 228,787.

Avery Products Corp.: *See*—
Van Arnam, Donald E. 228,730.

AVM Corp.: *See*—
Moldovan, Michael T., Jr. 288,800.

Bean Furniture Inc.: *See*—
Lindvall, Roy B. 228,713.

Bell, Mace H., and R. H. Yagami, to General Foods Corp. Foam generator. 228,763, 10–23–73, D23—17.

Bennett Manufacturing Co., Inc.: *See*—
Gault, Robert. 228,726.

Bergstrom, Theodore R. Fireplace grate. 228,728, 10–23–73, Cl. D7—207.

Bernzomatic Corp.: *See*—
Schmedes, Robert, and J. M. Nelson. 228,731.

Beynon, John H.: *See*—
Amy, Jonathan W., Beynon, and Jones. 228,773.
Amy, Jonathan W., Beynon, and Jones. 228,774.

Bierwith, Stanton F., to Great Canadian Oil Sands, Ltd. Excavating tooth. 228,781, 10–23–73, Cl. D39—1.

Borowiec, Edward J., to Kysor Industrial Corp. Vehicle air conditioner. 228,768, 10–23–73, Cl. D23—142.

Bower Manufacturing Co., Inc., The. *See*—
Bower, Ralph H. 228,769.

Bower, Ralph H., to The Bower Manufacturing Co., Inc. Bird feeder. 228,769, 10–23–73, Cl. D30—15.

Bradley, Milton, Co.: *See*—
Pottern, Alvin R. 228,825.

Brown, Richard E. to Twyco, Inc. Multiple contact electrical connector assembly. 228,783, 10–23–73, Cl. D26—1.

Burgess Vibrocrafters, Inc.: *See*—
Anderson, Douglas W. 228,729.

Campbell, Stephen J., Jr., to Damon Corp. Surgical lancet. 228,815, 10–23–73, Cl. D83—1.

Chesley, Ronald F.: *See*—
Goldfarb, Adolph E., Everitt, Chesley, and Frierdich. 228,778.

Cinque, Alphonse P. Opaque projection viewers. 228–807, 10–23–73, Cl. D61—1.

Cleminshaw, Douglas R, to Hall and McChesney Inc. Looseleaf binder. 228,826, 10–23–73, Cl. D97—2.

Colgate-Palmolive Co.: *See*—
Holme, Christian A. 228,741.

Conrad, Michael G., to Duralastic Lamp Products Co. Combined lamp reflector and diffuser. 228,792, 10–23–73, Cl. D46—16.

Cowan, Raymond S. Picture frame. 228,720, 10–23–73, D6—244.

Croyle, Jack V., and J. B. Swett, to Dart Industries Inc. Removable inner funnel for a dispensing container. 228,723, 10–23–73, Cl. D7—68.

Cunningham, J. A. C., to Gladding Corp. Artificial fishing lure. 228,761, 10–23–73, Cl. D22—27.

Damon Corp.: *See*—
Campbell, Stephen P., Jr. 228,815.

Danielson, Irvin R., to Thor Power Tool Co. Work steel. 228,732, 10–23–73, Cl. D8—70.

Dart Industries Inc.: *See*—
Croyle, Jack V., and Swett. 228,723.

Day, Andrea A., and A. Von Drachenfels. Storage container for artist's materials or the like. 228,820, 10–23–73, Cl. D87—1.

Dejohn, Sam. Ceiling dome for a hanging lamp. 228,794, 10–23–73, Cl. D48—7.

Dejohn, Sam. Ceiling dome for a hanging lamp. 228,796, 10–23–73, Cl. D48—7.

Dejohn, Sam. Ceiling dome for a hanging lamp. 228,797, 10–23–73, Cl. D48—7.

Diebler, Herman G.: *See*—
Amar, Henry E., Diebler, Isreell, Payne, and Smythe. 228,755.

Display Corporation International: *See*—
Oelschlaeger, Daniel J. 228,823.

Drake, Richard D.: *See*—
Perkins, William E., and Drake. 228,733.

Duralastic Lamp Products Co.: *See*—
Conrad, Michael G. 228,792.

Eastman Kodak Co.: *See*—
Swayze, Samuel F. 228,808.

Electric Energy Systems, Inc.: *See*—
Aronson, Robert R. 228,790.

Environmental Concepts Products Co., Inc.: *See*—
Koltz, Jack, and L. 228,709.

Ericsson, Carl-Eric, to Skogslunds Fabriks AB. Hinge. 228,735, 10–23–73. Cl. D8—195.

Everitt, Delmar K.: *See*—
Goldfarb, Adolph E., Everitt, Chesley, and Frierdich. 228,778.

Fabregat, Francisco P. Static turbo-gasifier for use in fuel-feeding systems of internal combustion engine. 228,814, 10–23–73, Cl. D77—1.

Farkas, Paul, to Thomas & Betts Corp. Container. 228,744, 10–23–73, Cl. D9—184.

Frierdich, Richard D.: *See*—
Goldfarb, Adolph E., Everitt, Chesley, and Frierdich. 228,778.

GAF Corp.: *See*—
Madsen, John S. 228,756.

Gager, Lawrence J., Jr. Visor and lens attachment for a helmet or the like. 228,700, 10–23–73, Cl. D2–233.

Gault, Robert, to Bennett Manufacturing Co., Inc. Trash receptacle. 228,726, 10–23–73, Cl. D7—194.

General Foods Corp.: *See*—
Bell, Mace H., and Yagami. 228,763.
McCaleb, Carl J., and Ribetti. 228,742.

Glaberson, Martin, and R. J. Gould, to Warner-Lambert Co. Razor kit box or similar article. 228,745, 10–23–73, Cl. D9—186.

Gladding Corp.: *See*—
Cunningham, J. A. Cutter. 228,761.

Goldfarb, Adolph E., D. K. Everitt, R. F. Chesley, and R. D. Frierdich, to Mattel, Inc. Figure toy car. 228,778, 10–23–73, Cl. D34—15.

Gould, Robert J.: *See*—
Glaberson, Martin, and Gould. 228,745.

Great Canadian Oil Sands, Ltd.: *See*—
Bierwith, Stanton F. 228,781.

Grimes, Gary S. Measuring spoon. 228,722, 10–23–73, Cl. D7—30.

Groendyk Manufacturing Co., Inc.: *See*—
Maxey, Clarence, and Walters. 228,811.

GTE Automatic Electric Laboratories Inc.: *See*—
Wollet, William M. 228,785.

Halberstadt, Lewis J., to Vistron Corp. Tooth stain-remover tip for toothbrushes and the like. 228,702, 10–23–73, Cl. D4—24.

Halberstadt, Lewis J., to Vistron Corp. Tooth stain-remover tip for toothbrushes and the like. 228,703, 10–23–73, Cl. D4—24.

Halberstadt, Lewis J., Vistron Corp. Tooth stain-remover for toothbrushes and the like. 228,704, 10–23–73, Cl. D4—24.

Hall, Albert E., and B. A. Thompson. Rope fastener. 228,736, 10–23–73, Cl. D8—229.

Hall and McChesney Inc.: *See*—
Cleminshaw, Douglas R. 228,826.

Harper-Wyman Co.: *See*—
Stohrer, Charles E., Jr. 228,766.

Harrell, Charles R. Frame front for spectacles. 228,804, 10–23–73, Cl. D57—1.

Harrell, Charles R. Spectacle frame front. 228,805, 10–23–73, Cl. D57—1.

Harrell, Charles R. Frame front for spectacles. 228,806, 10–23–73, Cl. D57—1.

Harrell, William H. Garbage can rack. 228,727, 10–23–73, Cl. D7—189.

Henry, Donald L. Artificial log. 228,765, 10–23–73, Cl. D23—94.

Hicks, Alan A., to Kohner Bros., Inc. Puzzle. 228,772, 10–23–73, Cl. D34—15.

Holme, Christian A., to Colgate-Palmolive Co. Combined jug and cap therefor. 228,741, 10–23–73, Cl. D9—43.

Hoog, Dixon R. Fish stringer or similar article. 228,760, 10–23–73, Cl. D22—24.

Horgan, William J., Jr. Combined panic device, handle, and lock housing set. 228,734, 10–23–73, Cl. D8—138.

Horvath, Henrietta M. X-ray drying rack. 228,816, 10–23–73, Cl. D83—1.

Hunt, Linburg. Stereo console cabinet. 228,803, 10–23–73, Cl. D56—4.

IMI Opella Ltd.: *See*—
Rowlands, Martyn O. 228,764.

Isreeli, Jack: *See*—
Amar, Henry E., Diebler, Isreeli, Payne, and Smythe. 228,755.

Izumi, Kamaichiro, to Izumiteitetsu Kabushiki Kaisha. Nail for horseshoes. 228,740, 10–23–73, Cl. D8—271.

Izumiteitetsu Kabushiki Kaisha: *See*—
Izumi, Kamaichiro. 228,740.

J. R. Handbags, Inc.: *See*—
Resnick, Murray. 228,819.

Jones, David O.: *See*—
Amy, Jonathan W., Beynon, and Jones. 228,773.
Amy, Jonathan W., Beynon, and Jones. 228,774.

Jones, John L., to UMF Systems Inc. Microfiche viewer. 228,809, 10–23–73, Cl. D61—1.

Kerr-Hays Co.: *See*—
Todd, Burt K. 228,721.

Keyloun, George P. Pleated kaftan. 228,699, 10–23–73, Cl. D2—49.

Kitai, Isao. Electronic calculating machine. 228,784, 10–23–73, Cl. D26—3.

Kitson, Gerald L. Stud anchor. 228,739, 10–23–73, Cl. D8—235.

Kitson, Gerald L. Egg belt track. 228,802, 10–23–73, Cl. D55—1.

Kleine, Eugene T. Window box. 228,779, 10–23–73, Cl. D35—3.

Klotz, Jack, and L., to Environmental Concepts Products Co., Inc. Canopy bed. 228,709, 10–23–73, Cl. D6—83.

Klotz, Louise: *See*—
Klotz, Jack, and L. 228,709.

Koch, Samuel J. Combined cigarette lighter and pipe holder. 228,798, 10–23–73, Cl. D48—27.

Kohner Bros., Inc.: *See*—
Hicks, Alan A. 228,772.

Koni, Yoshiji, to Matsushita Electric Industrial Co., Ltd. Magnetic tape cartridge for video-tape recorder. 228,789, 10–23–73, Cl. D26—14.

Kouri, Richard E., to Pow-R Corp. Golf cart. 228,751, 10–23–73, Cl. D14—3.

Kramer, Gideon A., to American Desk Manufacturing Co. Furniture pedestal. 228,716, 10–23–73, Cl. D6—196.

Kramer, Gideon A., American Desk Manufacturing Co. Chair arm. 228,717, 10–23–73, Cl. D6—194.

Kramer, Gideon A., to American Desk Manufacturing Co. Multiple seating furniture support. 228,718, 10–23–73, Cl. D6—196.

Kryssing, George J. Header for a motorcycle exhaust system. 228,753. 10–23–73, Cl. D14—6.

Kuchenbecker, Morris W., American Can Co. Cover for a packaging tray. 228,746, 10–23–73, Cl. D9—254.

Kysor Industrial Corp.: *See*—
Borowiec, Edward J. 228,768.

Lear Siegler Inc.: *See*—
Thorwaldsen, Stanley E. 228,705.

Lee, Samuel. Putter head. 228,776, 10–23–73, Cl. D34—5.

Lindvall, Roy B., to Beam Furniture Inc. Stack leg table. 228,713, 10–23–73, Cl. D6—177.

Littmann, Alexander F. Weatherstripping. 228,748, 10–23–73, Cl. D13—6.

Lyall, George E., to Automatic Radio Mfg. Co., Inc. Combination tape player and radio. 228,786, 10–23–73, Cl. D26—14.

Lyall, George E., to Automatic Radio Mfg. Co., Inc. Tape player. 228,787, 10–23–73, Cl. D26—14.

Madsen, John S., to GAF Corp. Design for floor tile or similar article. 228,756, 10–23–73, Cl. D18—2.

Mango, Joseph, to AMF Inc. Snowmobile. 228,754, 10–23–73, Cl. D14—24.

Martin, Daniel J. Neckwear hangers or similar articles. 228,712, 10–23–73, Cl. D6—117.

Mathews, Lyle H. Rack for utility, telephone and power cables or the like. 228,737, 10–23–73, Cl. D8—230.

Matsushita Electric Industrial Co., Ltd.: *See*—
Koni, Yoshiji. 228,789.

Mattel, Inc.: *See*—
Goldfarb, Adolph E., Everitt, Chesley, and Frierdich. 228,778.

Maw, Wayne E., to Phillips Petroleum Co. Closure or similar article. 228,743, 10–23–73, Cl. D9—254.

Maxey, Clarence, and W. C. Walters, to Groendyk Manufacturing Co., Inc. Buoyant life preserver vest. 228,811, 10–23–73, Cl. D71—1.

McCaleb, Carl J., and R. R. Ribetti, to General Foods Corp. Jar. 228,742, 10–23–73, Cl. D9—134.

McRae, William P. Combined holder and dispenser for cassettes, cartridges and the like. 228,715, 10–23–73, Cl. D6—188.

Medena AB: *See*—
Vallfors, Bertil S. 228,818.

Miyake, Takao: *See*—
Suganoya, Yoshio, and Miyake. 228,724.

Moffet, Lester M. Combined portable tape deck and speaker system or similar article. 228,788, 10–23–73, Cl. D26—14.

Moldovan, Michael T., Jr., to AVM Corp. Voting machine. 228,800, 10–23–73, Cl. D32—2.

Mondragon, Ralph. Chair. 228,706, 10–23–73, Cl. D6—31.

Mueller, Herbert J. Toy castle. 228,777, 10–23–73, Cl. D34—15.

Mullowney, Gale. Head support for beauty chair. 228,719, 10–23–73, Cl. D6—200.

Nelson, John M.: *See*—
Schmedes, Robert, and Nelson. 228,731.

Nova Scotia Research Foundation: *See*—
Taiani, Patrick M. 228,782.

Oelschlaeger, Daniel J., to Display Corp. International. Stanchion for beverage tap. 228,823, 10–23–73, Cl. D94—3.

Ohmura, Ryuichi. Offset for fishing rod assembly. 228,759, 10–23–73, Cl. D22—23.

Olko, Henry. Sofa. 228,708, 10–23–73, Cl. 6—57.

Olko, Henry. Tea cart. 228,750, 10–23–73, Cl. D14—3.

Ono, Katutosi: *See*—
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Ostergaard, James R. Sandal. 228,701, 10–23–73, Cl. D2—287.

Pascucci, Angelo G. Self-watering pot. 228,780, 10–23–73, Cl. D35—3.

Payne, George: *See*—
Amar, Henry E., Diebler, Isreeli, Payne, and Smythe. 228,755.

Peasley, Curtiss M. Wireless lighting fixture. 228,795, 10–23–73, Cl. D48—4.

Penner, Harold P. Gauge for picture frame mat cutter. 228,801, 10–23–73, Cl. D52—6.

Pentel Kabushiki Kaisha: *See*—
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Perkins, William E., and R. D. Drake. Extended handcuff-key. 228,733, 10–23–73, Cl. D8—136.

Petrosky, Charles. Ring mounted defensive blade. 228,758, 10–23–73, Cl. D22—1.

Phillips Petroleum Co.: *See*—
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Pihlaja, Elno A. Hut. 228,747, 10–23–73, Cl. D13—1.

Pottern, Alvin R., to Milton Bradley Co. Paper cutter. 228,825, 10–23–73, Cl. D93—1.

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Randell, Timothy M. Chess board. 228,775, 10–23–73, Cl. D34—5.

Resnick, Murray, to J. R. Handbags, Inc. Lady's handbag, or similar article. 228,819, 10–23–73, Cl. D87—3.

Ribetti, Robert R.: *See*—
McCaleb, Carl J., and Ribetti. 228,742.

Robby, Kenneth A. Golf ball cleaner. 228,799, 10–23–73, Cl. D49—1.

Rowlands, Martyn O., IMI Opella Ltd. Flow control lever for a faucet with shower attachment. 228,764, 10–23–73, Cl. D23—27.

Rubbermaid Industrial Products Corp.: *See*—
White, Thomas H. 228,821.

Sanford, Harry W., Auto Mag Corp. Hand gun. 228,757, 10–23–73, Cl. D22—1.

Schmedes, Robert, and J. M. Nelson, to Bernzomatic Corp. Propane blow torch. 228,731, 10–23–73, Cl. D8—30.

Sharp Kabushiki Kaisha: *See*—
Suganova, Yoshio, and Miyake. 228,724.

Shumate, William C. Candle holder. 228,793, 10–23–73, Cl. D48—2.

Skogslunds Fabriks AB: *See*—
Ericsson, Carl-Eric. 228,735.

Smythe, William J.: *See*—
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Stanley Works, The: *See*—
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Steedman, Marguerite C. Spoon. 228,725, 10–23–73, Cl. D7—144.

Stevenson, Robert S. Shampoo dispenser. 228,710, 10–23–73, Cl. D6—95.

Stohrer, Charles E., Jr., to Harper-Wyman Co. Gas burner. 228,766, 10–23–73, Cl. D23—129.

Stut, Petrus J., to U.S. Philips Corp. Alarm clock. 228,791, 10–23–73, Cl. D42—7.

Suganoya, Yoshio, and T. Miyake, to Sharp Kabushiki Kaisha. Electronic cooking range. 228,724. 10–23–73, Cl. D7—128.

Suska, Charles R., and P. Thomson, to The Stanley Works. Alarm unit. 228,812, 10–23–73, Cl. D72—1.

Swaine, Adeney, Brigg & Sons Ltd.: *See*—
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Swayze, Samuel F., to Eastman Kodak Co. Still camera. 228,808, 10–23–73, Cl. D61—1.

Swensson, Malte. Vehicle trailer. 228,749, 10–23–73, Cl. D14—3.

Swett, James B.: *See*—
Croyle, Jack V., and Swett. 228,723.

Tada, Mitsuru. Removable side guard for automobile. 228,752, 10–23–73, Cl. D14—6.

Taiani, Patrick M., to Nova Scotia Research Foundation. Cable assembly for a wave sensor. 228,782, 10–23–73, Cl. D26—1.

Technicon Instruments Corp. : *See*—
Amar, Henry E., Diebler, Isreeli, Payne, and Smythe, 228,755.
Thomas & Betts Corp. : *See*—
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Thor Power Tool Co. : *See*—
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Thorwaldsen, Stanley E. to Lear Siegler Inc. Pedestal base. 228,705, 10–23–73, Cl. D6—29.
Todd, Burt K., to Kerr-Hays Co. Resilient coaster or similar article. 228,721, 10–23–73, Cl. D7—45.
Twyco, Inc. : *See*—
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Valifors, Bertil S., to Medena AB. Neurosurgical suction device. 228,818, 10–23–73, Cl. D83—12.
Van Arnam, Donald E., to Avery Products Corp. Burnishing tool. 228,730, 10–23–73, Cl. D8—14.
Van Lelyveld, Maarten W. Dry shaver. 228,824, 10–23–73, Cl. D95—3.
Vesey, Francis A. Invalid walker. 228,822, 10–23–73, Cl. D88—5.
Vistron Corp. : *See*—
Halberstadt, Lewis J. 228,702.
Halberstadt, Lewis J. 228,703.
Halberstadt, Lewis J. 228,704.
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CLASS 2
161A 3,766,564
200 3,766,565
275 3,766,566

CLASS 3
1 3,766,567
3,766,568
7 3,766,569

CLASS 4
37 3,766,571
149 3,766,572
172.12 3,766,573
191 3,766,574
210 3,766,575
222 3,766,570
231 3,766,576

CLASS 5
12 3,766,577
267 3,766,578
348WB 3,766,579
351 3,766,580

CLASS 8
21C 3,767,356
25 3,767,357
3,767,358
115.7 3,767,359
137.5 3,767,360
151.2 3,766,581
177AB 3,767,361

CLASS 9
8P 3,766,582
3,766,583

CLASS 10
86R 3,766,584

CLASS 13
12 3,767,831
13 3,767,832

CLASS 14
72 3,766,585

CLASS 15
83 3,766,586
104.06R 3,766,587
142 3,766,588
180 3,766,589
186 3,766,590
245 3,766,591
256.51 3,766,592
308 3,766,593
327R 3,766,594
330 3,766,595
397 3,766,596

CLASS 16
87.4R 3,766,597
125 3,766,598
171 3,766,599
190 3,766,600

CLASS 17
1R 3,766,601
11 3,766,602
42 3,766,603
44.2 3,766,604
64 3,766,605

CLASS 19
65T 3,766,606
156.3 3,766,607

CLASS 21
58 3,767,362

CLASS 23
254EF 3,767,363
259 3,767,364
269 3,767,365
281 3,767,366
3,767,367

CLASS 24
16PB 3,766,608
115R 3,766,610
126 3,766,609
230A 3,766,611
3,766,612
255TV 3,766,613

CLASS 28
71.3 3,766,614

CLASS 29
25.35 3,766,615
33P 3,766,617
103B 3,766,618
115 3,766,620
157.1R 3,766,619
187.5 3,767,368
194 3,767,369
195.5 3,767,370
200B 3,766,621
203MW 3,766,622
3,766,624
203TS 3,766,625
203B 3,766,623
208C 3,766,627
208D 3,766,626
243.52 3,766,628
401 3,766,630
412 3,766,629
420.5 3,766,642
424 3,766,631
428 3,766,632
470.5 3,766,633
471.9 3,766,634
472.9 3,766,635
526 3,766,636
571 3,766,637
583 3,766,638
593 3,766,639
603 3,766,640
605 3,766,641
611 3,766,643
624 3,766,644
630E 3,766,645
3,766,646

CLASS 30
9 3,766,647
255 3,766,648
287 3,766,649

CLASS 32
8 3,766,650

CLASS 33
76R 3,766,651
97 3,766,652
174B 3,766,654
174L 3,766,653
178R 3,766,655
265 3,766,656
348 3,766,657
366 3,766,658
392 3,766,659

CLASS 34
9 3,766,660
10 3,766,661
158 3,766,662
168 3,766,663
182 3,766,664

CLASS 35
9B 3,766,665
17 3,766,666
31G 3,766,667
35H 3,766,668

CLASS 36
43 3,766,669
67B 3,766,670

CLASS 37
69 3,766,671
91 3,766,672

CLASS 38
90 3,766,673

CLASS 40
113 3,766,674
126A 3,766,675
158A 3,766,676

CLASS 42
75D 3,766,677

CLASS 43
6 3,766,678
15 3,766,679
16 3,766,680
42.14 3,766,682
43.12 3,766,681

CLASS 46
17 3,766,683

CLASS 47
1.2 3,766,684
37 3,766,685

CLASS 49
35 3,766,687
43 3,766,686

CLASS 51
3,766,688
145T 3,766,689
173 3,766,690
307 3,767,371

CLASS 52
71 3,766,691
3,766,692
3,766,693
95 3,766,694
127 3,766,695
241 3,766,696
312 3,766,697
400 3,766,698
592 3,766,699
624 3,766,700

CLASS 53
26 3,766,701
30 3,766,702
38 3,766,703
48 3,766,704
88 3,766,705
124D 3,766,706
3,766,708
134 3,766,707
167 3,766,709
373 3,766,710

CLASS 54
8 3,766,711

CLASS 55
21 3,766,713
48 3,766,714
96 3,766,712
3,766,715
223 3,766,716
3,766,717
228 3,766,718
306 3,766,719
461 3,766,720

CLASS 56
10.3 3,766,721
11.6 3,766,722
13.3 3,766,723
331 3,766,724
364 3,766,725

CLASS 57
90 3,766,726

CLASS 58
3 3,766,727
4A 3,766,728
23D 3,766,729
125 3,766,731
425 3,766,730

CLASS 60
36 3,766,733
39.28R 3,766,734
64 3,766,732
550 3,766,735
3,766,736

CLASS 61
1F 3,766,738
3,766,739
1 3,766,737
41A 3,766,740
53.5 3,766,741
69R 3,766,742
72.3 3,766,743

CLASS 62
73 3,766,744
196 3,766,745
221 3,766,746
226 3,766,747
243 3,766,748
259 3,766,750
262 3,766,749
280 3,766,751
435 3,766,752

CLASS 65
13 3,767,372
144 3,767,373
165 3,767,374
182R 3,767,375

CLASS 66
50B 3,766,753
78R 3,766,754
154A 3,766,755

CLASS 68
19.1 3,766,756

CLASS 70
18 3,766,757
25 3,766,758
58 3,766,759
314 3,766,760

CLASS 71
92 3,767,376
107 3,767,377

CLASS 72
8 3,766,761
9 3,766,762
13 3,766,763
22 3,766,764
38 3,766,765
60 3,766,766
249 3,766,767
256 3,766,768
3,766,769
340 3,766,770
450 3,766,771

CLASS 73
17R 3,766,772
56 3,766,773
64.1 3,766,774
67.8S 3,766,775
78 3,766,776
141AB 3,766,777
167 3,766,778
228 3,766,779
231R 3,766,780
355R 3,766,781
359 3,766,782
368.2 3,766,783
425.4P 3,766,784
425.6 3,766,785
453 3,766,786
516R 3,766,787

CLASS 74
84 3,766,789
89.15 3,766,790
243H 3,766,791
3,766,792
335 3,766,793
355 3,766,794
405 3,766,795
410 3,766,797
411 3,766,796
424.8R 3,766,798
3,766,800
441 3,766,788
473R 3,766,799
480B 3,766,801
512 3,766,802
625 3,766,803
687 3,766,804
768 3,766,805

CLASS 75
1 3,767,378
42 3,767,379
58 3,767,380
63 3,767,381
68R 3,767,382
76 3,767,383
101R 3,767,384
122 3,767,385
123D 3,767,386
124 3,767,387
3,767,388
128C 3,767,389
128G 3,767,390
134C 3,767,391

CLASS 76
31 3,766,807
42 3,766,806
112 3,766,808

CLASS 79
25.35 3,766,616

CLASS 81
7 3,766,809
90R 3,766,810
180R 3,766,811

CLASS 82
40R 3,766,812

CLASS 83
56 3,766,813
99 3,766,814
160 3,766,815
489 3,766,816
581.1 3,766,817

CLASS 84
1.01 3,767,833
1.19 3,767,834
454 3,766,818

CLASS 85
77 3,766,819

CLASS 86
23 3,766,820

CLASS 89
1.8 3,766,828
1.815 3,766,829
12 3,766,821
14E 3,766,822
33SF 3,766,824
3,766,825
33D 3,766,823
41B 3,766,826
41M 3,766,827

CLASS 91
24 3,766,832
26 3,766,830

CLASS 92
2 3,766,831
35 3,766,834
37 3,766,833
68 3,766,835
85 3,766,836

CLASS 93
36.6 3,766,837

CLASS 95
4.05R 3,766,838
42 3,766,839
60 3,766,840
64R 3,766,841
89A 3,766,842

CLASS 96
1R 3,767,392
1.5 3,767,393
11 3,767,394
36.1 3,767,395
3,767,396
36.2 3,767,397
3,767,398
48R 3,767,399
3,767,400
50A 3,767,401
53 3,767,402
55 3,767,403
76C 3,767,404
3,767,406
76R 3,767,405
84R 3,767,407
90 3,767,408
91N 3,767,409
94 3,767,410
100 3,767,411
3,767,412
107 3,767,413
114.6 3,767,414
115R 3,767,415

CLASS 98
2R 3,766,843
33R 3,766,844

CLASS 99
2R 3,767,416
324 3,766,845
353 3,766,846
518 3,766,847

CLASS 100
117 3,766,848
232 3,766,849

CLASS 101
1 3,766,850
40 3,766,851
93C 3,766,852
113 3,766,853
219 3,766,855
366 3,766,856
415.1 3,766,857
426 3,766,854

CLASS 102
37.8 3,766,858

CLASS 104
1 3,766,859
17A 3,766,860
91 3,766,861

CLASS 105
358 3,766,862

CLASS 106
8 3,767,431
52 3,767,432
3,767,434
89 3,767,435
90 3,767,436
161 3,767,437
193J 3,767,438
210 3,767,439
214 3,767,440
272 3,767,441
288Q 3,767,442
291 3,767,443
308R 3,767,444

CLASS 108
111 3,766,863
3,766,864

CLASS 109
49.5 3,766,865

CLASS 110
8R 3,766,866
3,766,867
182.5 3,766,868

CLASS 112
7R 3,766,891
9 3,766,869
104 3,766,870
210 3,766,871
439 3,766,872

CLASS 113
1C 3,766,873

CLASS 114
.5D 3,766,874
73 3,766,875
74A 3,766,876
208R 3,766,877
3,766,878
222 3,766,879
241 3,766,880

CLASS 116
63P 3,766,881
121 3,766,882

CLASS 117
8 3,767,445
17.5 3,767,446
33.5CP 3,767,447
34 3,767,448
36.1 3,767,450
36.2 3,767,449
3,767,451
37R 3,767,452
46CA 3,767,453
61 3,767,454
65.2 3,767,455
71M 3,767,456
93.31 3,767,457
100B 3,767,459
100S 3,767,458
123E 3,767,460
132B 3,767,461
201 3,767,462
215 3,767,463
237 3,767,464

CLASS 118
44 3,766,883
58 3,766,884
313 3,766,885
420 3,766,886
637 3,766,887

CLASS 119
4 3,766,888
96 3,766,890
144 3,766,889

CLASS 122
32 3,766,892

CLASS 123
8.45 3,766,893
53B 3,766,894
102 3,766,895
119A 3,766,896
119B 3,766,898
119R 3,766,897
140CC 3,766,899
191M 3,766,900

CLASS 124
1 3,766,901
13R 3,766,902
15 3,766,903
24R 3,766,904

CLASS 126
42 3,766,905
299B 3,766,906

CLASS 128
2B 3,766,907
2H 3,766,908
11 3,766,909
20 3,766,910
66 3,766,911
71 3,766,912
132D 3,766,913
145.8 3,766,914
214.4 3,766,915
3,766,916
218M 3,766,917
218P 3,766,918
220 3,766,919
246 3,766,920
263 3,766,921
284 3,766,922
303.1 3,766,923
325 3,766,924
346 3,766,925
3,766,926
351 3,766,927
419P 3,766,928

CLASS 131
119 3,766,929

CLASS 132
33R 3,766,930
92A 3,766,931

CLASS 135
4 3,766,932

CLASS 136
24 3,767,465
131 3,767,466
135 3,767,467
166 3,767,468
225 3,767,469
3,767,470

CLASS 137
116.3 3,766,933
3,766,934
269 3,766,935
312 3,766,936
344 3,766,937
355.16 3,766,938
434 3,766,939
460 3,766,940
493.4 3,766,941
566 3,766,942
608 3,766,943
625.6 3,766,944
806 3,766,945

CLASS 138
44 3,766,946
89 3,766,947
109 3,766,948
133 3,766,949

CLASS 139
12 3,766,950

CLASS 141
37 3,766,951

CLASS 144
34R 3,766,952

CLASS 148
1.5 3,767,471
1.6 3,767,472
3,767,473
6.1 3,767,474
6.14 3,767,475
6.15R 3,767,476
6.15Z 3,767,478
6.35 3,767,477
32 3,767,479
32.5 3,767,480
171 3,767,481
175 3,767,486
177 3,767,482
186 3,767,433
3,767,483
188 3,767,484
3,767,485
191 3,767,487

CLASS 149
7 3,767,488
18 3,767,489

CLASS 150
.5 3,766,953
52R 3,766,954

CLASS 152
171 3,766,955
208 3,766,956
242 3,766,957

CLASS 156
2 3,767,490
5 3,767,491
11 3,767,492
17 3,767,493
3,767,494
72 3,767,495
86 3,767,496
89 3,767,497
94 3,767,498
181 3,767,499
184 3,767,500
199 3,767,501
242 3,767,502
244 3,767,503
268 3,767,504
276 3,767,505
293 3,767,506
382 3,767,507
389 3,767,508
415 3,767,509
494 3,767,510
499 3,767,511
502 3,767,512
516 3,767,513
518 3,767,514
568 3,767,515

CLASS 160
84R 3,766,958
135 3,766,959
405 3,766,960

CLASS 161
2 3,767,516
3,767,517
146 3,767,518
168 3,767,519
175 3,767,520
216 3,767,521
232 3,767,522
254 3,767,523

CLASS 162
8 3,767,524

CLASS 164
66 3,766,961
82 3,766,962
89 3,766,963
120 3,766,964
123 3,766,965
249 3,766,966
283MS 3,766,967
283 3,766,968
383 3,766,969
392 3,766,970

CLASS 165
1 3,766,971
8 3,766,972
26 3,766,973
39 3,766,974
47 3,766,977
74 3,766,975
122 3,766,976

CLASS 166
.5 3,766,978
55 3,766,979
202 3,766,981
248 3,766,980
261 3,766,982
274 3,766,983
294 3,766,984
302 3,766,985
308 3,766,986

CLASS 172
126 3,766,987
548 3,766,988
605 3,766,989

CLASS 173
12 3,766,990
20 3,766,991
57 3,766,996

CLASS 174
11BH 3,767,835
24 3,767,836
25G 3,767,838
27 3,767,837
52S 3,767,839
73R 3,767,840
84C 3,767,841
128 3,767,842
142 3,767,843

CLASS 175
25 3,766,992
50 3,766,993
3,766,994
53 3,766,995
66 3,766,997
373 3,766,998

CLASS 178
5.2R 3,767,844
5.4ST 3,767,846
5.4R 3,767,845
3,767,854
6 3,767,847
6.6DC 3,767,849
6.6R 3,767,848
6.7R 3,767,850
6.8 3,767,851
7.2 3,767,852
3,767,853
18 3,767,858
68 3,767,855
69A 3,767,856

CLASS 179
1CN 3,767,861
1MN 3,767,860
1H 3,767,859
7.1R 3,767,862
18ES 3,767,863
18HB 3,767,857
100R 3,767,864
100.2E 3,767,866
100.4R 3,767,865
175.25 3,767,867

CLASS 180
5R 3,766,999
16 3,767,000
69C 3,767,001
102 3,767,002

CLASS 181
24 3,767,003
32R 3,767,004
3,767,005
49 3,767,006

CLASS 182
2 3,767,007
129 3,767,008
139 3,767,009
150 3,767,010
187 3,767,011

CLASS 184
5 3,767,012
6.12 3,767,014
6.3 3,767,013

CLASS 188
71.6 3,767,015
71.9 3,767,016
72.5 3,767,017
250G 3,767,018

CLASS 191
49 3,767,868

CLASS 192
45 3,767,019

CLASS 195
11 3,767,526
28R 3,767,527
30 3,767,528
3,767,529
62 3,767,530
63 3,767,531
65 3,767,532
66R 3,767,533
115 3,767,534
116 3,767,535

CLASS 197
1R 3,767,020
74 3,767,021
98 3,767,022
127R 3,767,023
133R 3,767,024

CLASS 198
19 3,767,025
31AC 3,767,026
32 3,767,027
33AC 3,767,028
3,767,029
36 3,767,030
92 3,767,031
129 3,767,032
131 3,767,033
196 3,767,034

CLASS 200
1R 3,767,869
6R 3,767,870
50AA 3,767,874
50A 3,767,873
50C 3,767,871
3,767,872
52R 3,767,875
157 3,767,876
159R 3,767,877
3,767,878
167A 3,767,879
169R 3,767,880
172A 3,767,881

CLASS 202
263 3,767,536

CLASS 204
13 3,767,537
30 3,767,538
55R 3,767,540
56R 3,767,541
98 3,767,542
107 3,767,543
141.5 3,767,544
149 3,767,046
155 3,767,545
158R 3,767,546
159.23 3,767,547
180P 3,767,548
3,767,549
181 3,767,550
192 3,767,551
195M 3,767,553
195P 3,767,552
213 3,767,554
224M 3,767,555
243R 3,767,556
263 3,767,557
269 3,767,558
298 3,767,559
299 3,767,560
502R 3,767,539

CLASS 206
1R 3,767,035
16R 3,767,036
45.19 3,767,037
46BA 3,767,038
59C 3,767,039
3,767,040
65E 3,767,041
3,767,042
79 3,767,043

CLASS 208
37 3,767,561
57 3,767,562
85 3,767,563
92 3,767,564
93 3,767,565
120 3,767,566
122 3,767,567
134 3,767,568
210 3,767,569

CLASS 209
121 3,767,044
144 3,767,045
240 3,767,047

CLASS 210
16 3,767,570
30 3,767,571
50 3,767,572
77 3,767,048
108 3,767,049
169 3,767,050
197 3,767,051
225 3,767,052
232 3,767,053
3,767,054
242 3,767,055
409 3,767,056

CLASS 211
10 3,767,057
11 3,767,185
41 3,767,058
149 3,767,059

CLASS 212
81 3,767,060
144 3,767,061

CLASS 213
127 3,767,062

CLASS 214
1BB 3,767,063
1R 3,767,064
6H 3,767,065
10.5R 3,767,066
16.4A 3,767,072
83.22 3,767,067
83.3 3,767,068
86A 3,767,069
146R 3,767,070
152 3,767,071
307 3,767,073
628 3,767,074
776 3,767,075

CLASS 215
40 3,767,076
42 3,767,077

CLASS 219
8.5 3,767,882
10.55 3,767,883
3,767,884
56 3,767,885
69S 3,767,886
98 3,767,887
137 3,767,889
3,767,890
146 3,767,888
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243 3,767,892
287 3,767,893
321 3,767,894
377 3,767,895
438 3,767,896
441 3,767,898
451 3,767,897

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89A 3,767,079

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90 3,767,081
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3,767,084

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136 3,767,086
144.5 3,767,087
205 3,767,088
221 3,767,089
383 3,767,090

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96 3,767,092

CLASS 224
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3,767,094
5V 3,767,095

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37 3,767,102

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175 3,767,906
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552 3,767,125
661 3,767,126

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102R 3,767,913

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71.2 3,767,132
78.8 3,767,133
107SB 3,767,134
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156 3,767,136
206 3,767,137

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3,767,144
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186 3,767,157
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213 3,767,165
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62.51 3,767,580
62.61 3,767,581
62.9 3,767,579
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117 3,767,584
171 3,767,585
187H 3,767,586
301.02W 3,767,587
301.4H 3,767,588
301.4R 3,767,589
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665R 3,767,715
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3,767,748
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134 3,767,752
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3,767,273
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133 3,767,937
235R 3,767,938
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CLASS 310

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90 3,767,949
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27TD 3,767,960
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124 3,767,978
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235R 3,767,980
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3,767,983
3,767,984

CLASS 318

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CLASS 320

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3,767,998
3,767,999
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CLASS 324

.5R 3,768,003
16R 3,768,004
51 3,768,005
61R 3,768,006
84 3,768,007
94 3,768,008
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117R 3,768,011
127 3,768,012
132 3,768,013
158R 3,768,014
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391 3,768,019
478 3,768,021

CLASS 328

39 3,768,022
111 3,768,023
150 3,768,024
151 3,768,025
207 3,768,026

CLASS 329

134 3,768,027

CLASS 330

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5 3,768,029
15 3,768,031
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CLASS 331

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24.1 3,768,040
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31R 3,768,045
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73S 3,768,047
84M 3,768,048
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97S 3,768,050

CLASS 334

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CLASS 335

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190 3,768,052
216 3,768,053
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CLASS 336

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CLASS 337

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CLASS 338

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25 3,768,059
32R 3,768,060
125 3,768,061

CLASS 339

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31R 3,768,063
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59R 3,768,065
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99R 3,768,067
221M 3,768,068

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3,768,074
3,768,075
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3,768,077
3,768,078
3,768,079
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174.1C 3,768,082
3,768,083
243 3,768,084
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282 3,768,088
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103 3,768,098

CLASS 350

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156 3,767,288
160C 3,767,289
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237 3,767,291
293 3,767,292

CLASS 352

78R 3,767,293
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79 3,767,295
87 3,767,296
130 3,767,297
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CLASS 356

51 3,767,304
63 3,767,303
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109 3,767,307
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218 3,767,310

CLASS 403

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171 3,767,237
344 3,767,235

CLASS 404

67 3,767,311
106 3,767,312

CLASS 408

14 3,767,313
50 3,767,314
59 3,767,315
79 3,767,316
183 3,767,317

CLASS 415

1 3,767,318
17 3,767,319
36 3,767,320
110 3,767,321

CLASS 416

97 3,767,322
98 3,767,323
201 3,767,324

CLASS 417

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214 3,767,326
216 3,767,327
310 3,767,328
360 3,767,329
420 3,767,330

CLASS 418

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43 3,767,332
56 3,767,333
248 3,767,334
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330 3,767,827

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53 3,767,761
145 3,767,762
194 3,767,763
213.2 3,767,764
220 3,767,765
3,767,766
269 3,767,767
302 3,767,758
304 3,767,768
309 3,767,769
3,767,770
329 3,767,771
404 3,767,772
447 3,767,773
3,767,774
474 3,767,775
475 3,767,776
575 3,767,777
588 3,767,778
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605 3,767,780
645 3,767,781

CLASS 424

2 3,767,782
3,767,783
3.3 3,767,817
28 3,767,784
29 3,767,785
49 3,767,791
65 3,767,786
76 3,767,787
78 3,767,788
3,767,789
81 3,767,790
95 3,767,792
122 3,767,793
3,767,799
157 3,767,794
180 3,767,800
212 3,767,795
230 3,767,801
244.4 3,767,802
250 3,767,796
251 3,767,797
254 3,767,798
263 3,767,803
270 3,767,804
274.1 3,767,805
278 3,767,806
280 3,767,807
298 3,767,808
304 3,767,809
309 3,767,810
310 3,767,811
315 3,767,812
318 3,767,813
319 3,767,814
321 3,767,815
322 3,767,816
330 3,767,818
3,767,819
352 3,767,820

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145 3,767,339

146	3,767,340
150	3,767,341
157	3,767,342
218	3,767,343
308	3,767,344
326	3,767,345
372	3,767,424
378	3,767,346
379	3,767,347
385	3,767,348
387	3,767,349
	3,767,350
432	3,767,351
441	3,767,352
464	3,767,353

CLASS 426

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62	3,767,423
65	3,767,425
	3,767,428
	3,767,429
	3,767,525
77	3,767,420
147	3,767,419
152	3,767,422
153	3,767,421
162	3,767,830
175	3,767,427
222	3,767,426
241	3,767,823
276	3,767,821
290	3,767,824
	3,767,825
293	3,767,826
380	3,767,430
387	3,767,828
405	3,767,829
461	3,767,418
523	3,767,417

CLASS 431

63	3,767,354
295	3,767,355

CLASS 434

9	3,768,097

CLASSIFICATION OF DESIGNS

D02—	49	228,699
	233	228,700
	287	228,701
D04—	24	228,702
		228,703
		228,704
D06—	29	228,705
	31	228,706
	57	228,708
	67	228,707
	83	228,709
	95	228,710
	116	228,711
	117	228,712
	177	228,713
	180	228,714
	188	228,715
	194	228,717
	196	228,716
		228,718
	200	228,719
	244	228,720
D07—	45	228,721
	50	228,722
	68	228,723
	128	228,724
	144	228,725
	189	228,727
	194	228,726
	207	228,728
D08—	8	228,729
	14	228,730
	30	228,731
	70	228,732
	136	228,733
	138	228,734
	195	228,735
	229	228,736
	230	228,737
	235	228,738
		228,739
	271	228,740
D09—	43	228,741
	134	228,742
	184	228,744
	186	228,745
	254	228,743
		228,746
D13—	1	228,747
	6	228,748
D14—	3	228,749
		228,750
		228,751
	6	228,752
		228,753
	24	228,754
D16—	2	228,755
D18—		228,756
D22—	1	228,757
		228,758
	23	228,759
	24	228,760
	27	228,761
	31	228,762
D23—	17	228,763
	27	228,764
	94	228,765
	129	228,766
	142	228,768
D24—	1	228,767
D26—		228,782
		228,783
	5	228,784
	14	228,785
		228,786
		228,787
		228,788
		228,789
	15B	228,790
D30—		228,769
	20	228,770
D34—	5	228,771
		228,773
		228,774
		228,775
		228,776
	15	228,772
		228,777
		228,778
D35—	3	228,779
		228,780
D39—	1	228,781
D42—	7	228,791
D48—	2	228,793
	4	228,795
	7	228,794
		228,796
		228,797
	16	228,792
	27A	228,798
D49—	1	228,799
D52—	2	228,800
	6	228,801
D55—	1	228,802
D56—	4	228,803
D57—	1	228,804
		228,805
		228,806
D61—		228,807
		228,808
		228,809
D64—	11	228,810
D71—	1	228,811
D72—		228,812
D74—	17	228,813
D77—	1	228,814
D83—		228,815
		228,816
	12	228,818
D86—	10	228,817
D87—	1	228,820
		228,821
	3	228,819
D88—	5	228,822
D94—	3	228,823
D95—	R	228,825
		228,824
D97—	2	228,826

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

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Alaska..... 2
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9 : 228,710
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11 : 228,777
12 : 228,700
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16 : 228,775

17 : 228,729
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18 : 228,769
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25 : 228,702
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26 : 228,705

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U. S. GOVERNMENT PRINTING OFFICE : O - 1973

U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*